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LECTURES BY M. DE BLAINVILLE ON COMPARATIVE OSTEOLOGY.

THE

COMPARATIVE OSTEOGRAPHY

OF THE

SKELETON AND DENTAR SYSTEM

IN THE FIVE CLASSES OF

VERTEBRAL ANIMALS,

RECENT AND FOSSIL.

BY M. H. M. DUCROTAY DE BLAINVILLE,

Member of the Institute of France.

WITH GRAPHIC DELINEATIONS BY M. WERNER;

EDITED (FROM THE FRENCH) AND

ADDITIONALLY ILLUSTRATED

WITH NUMEROUS NOTES, OBSERVATIONS,

AND DRAWINGS,

BY ROBERT KNOX, M.D.,

Edinburgh; Corresponding Member of the French Academy of Medicine, &c. &c.

Ascending Scale.

In ascending the scale (considering the Makis, properly so called, as a central point or type of comparison), as high as the small group of the Tarsiers, the characteristic feature of whose skeleton is the astonishing length of the tarsus, and still ascending through the small division of the Galagos (which present very slight characteristic differences), we find, at the top of the scale, the Loris (*L. Tardigradus*, Linn.) with which animal, we are of opinion, the family ought to commence. These *Lemurs* have all the characteristic osteography of the Maki (*L. Macoco*, Linn.), which we have selected for our type, with this chief difference, that their tail is very short, and the mussel (snout) much less elongated.

The whole vertebral column (*head included*) is generally less elongated, and more suddenly truncated, both anteriorly and posteriorly.

The head, in truth, is much more truncated, as well in respect to its cerebral portion, as its appendages or jaws, so that the anterior margin of the external auditory canal divides the cranium nearly into three parts, whilst it is so much further back in the Maki Vari, as only to equal about a fourth the whole length of the head; the cranium is, besides, larger posteriorly, in consequence of the great size of the mastoid bone (*mastoid process of the temporal*, hum. anat.), and the greater development of the occipital crest. The frontal bone is still more concealed by the elevation of the orbitar crest, and there is even an approach to the formation of a sagittal crest, in consequence of the near approximation of the temporal fossæ. Lastly, the anterior sphenoid and the vomer, being still more keel-shaped inferiorly, unite with the palatine bones, so as to form two distinct foramina at the posterior part of the nasal fossæ; in other respects the differences are so slight, as only to be detected by the expert Iconographist.

We make the same remark in respect to the appendages or jaws; the malar foramen is extremely small, the reverse of the arch which is large; the sub-orbitar opening is large. With respect to the lower jaw, I have already alluded to the great size of the mastoid portion of the temporal bone when compared to that of the Maki Vari, and the remarkable smallness of the *bulla ossea;* we find the foramina, for the escape of veins, behind the condyloid process; lastly, the mandible (dentar process) bears a striking similarity with that of the lowest of the Cebidæ, not only on account of the shortness of its horizontal branch, but also in the form of its angle, which is rounded, thin, and curved inwards.

The spinal column, in the Lemuridæ, resembles strongly that of the Simiæ generally, and particularly the tail-less Simiæ or Apes properly so called, owing to the seven cervical vertebræ being larger, less elongated, and forming a short neck; the spinous and transverse processes are all well developed; the transverse processes are nearly equal, and very much imbricated; the sixth wants its inferior lobe (*anterior tubercle*), the spinous

process of the axis is slightly roof-shaped, enlarged, and bifurcated posteriorly; that of the third, fourth, and fifth, is nearly equal, and less than that of the sixth and seventh vertebræ, where they are nearly equal, and elevated almost as high as the highest dorsal.

The dorsal region is of great length and composed of sixteen vertebræ, in every respect closely resembling each other, having all their spinous processes directed backwards; only those of the last three vertebræ are rather broader and shorter than the others.

The lumbar region is also very long, formed of eight nearly equal vertebræ, increasing, in a very slight degree, from the first to the last, which latter sometimes unites with the sacrum. All these vertebræ are remarkable for the extreme shortness of their transverse processes, which, indeed, scarcely exist in the first,—their posterior articular processes want the styloid processes; and, lastly, the spinous processes increase slightly from the first to the last, and are inclined backwards, as in the Gibbons.

The sacral region is still sufficiently peculiar in this genus, it is long, narrow, and carinated mesially; it includes, in fact, in addition to the three vertebræ so uniformly composing it, the three first coccygeal, in such a manner as to bear no slight resemblance to that of birds, more especially since the last lumbar not unfrequently also unites, and forms a portion of the sacrum; nevertheless, only one vertebra forms the sacro-iliac articulation.

The coccygeal region has from seven to eight vertebræ, forming a triangular pointed coccyx, slightly depressed, having neither superior nor inferior arches, and the first alone possessing a rudiment of the transverse processes. The sternebræ also present sufficiently important distinctions.

The hyoid apparatus, large and flat, has its styloid horns composed of only two portions.

There are eleven thoracic sternebræ, all, with the exception of the two terminal ones, short, slightly compressed, and nearly equal in size; even the manubrium is rather short, whilst the xiphoid process is of medium length.

There are sixteen pairs of ribs (eleven sternal and five asternal), all rather short, thick, more especially the first pair, and, with the exception of the last, which becomes rather suddenly delicate, they have only one curve.

The sternal appendages are cartilaginous, and strong, although compressed; they increase regularly in length, from the first to the last.

The limbs in the Loris, compared with those of the Makis, present much fewer differences than we have found in the head and trunk; there is a remarkable equality between the two pairs of limbs.

With regard to the anterior (*thoracic limbs*), the clavicle is, nevertheless, proportionally longer, since it is nearly half as long as the humerus; the scapula, broader, resembles, in that respect, that of the Ouistitis; and the tubercle, at the root of the coracoid process, is also more developed. The humerus equals in length the first twelve dorsal vertebræ, and its internal condyle is invariably perforated by a short oblique canal; the radius equals the humerus in length; both the radius and ulna are delicate. With regard to the carpus, the semilunar bone is not larger than in the Maki Vari; but the intermediate (*ninth bone*) is certainly considerably larger, it articulates very closely with the scaphoid, and also touches the semilunar; the pisiform is very small. The trapezium is rather boat-shaped, and the unciform bone has its hook-like process but little marked. With regard to the fingers, the relative proportions are altogether different from those of the Maki Vari; in fact, the metacarpal bones are still shorter, the fourth is a little longer than the median, and the second scarcely equals the first in length. The phalanges preserve pretty nearly the same proportions, those of the indicator being scarcely so long as those of the thumb, which are also always larger, and those of the ring finger being the largest; in all the fingers the distal phalanx is remarkably short.

The posterior (*pelvian*) limbs are still less dissimilar than the anterior. The iliac portion of the os innominatum is very narrow, and almost cylindrical posterior to its enlarged club shaped anterior extremity (crest) which articulates with the sacrum: the pubic portion is larger, long, and oblique; the ilio-pubic eminence and line are wanting; the ischiatic portion of the os innominatum is truncated in the form of a semicircle, showing a seeming tendency to unite with the transverse processes of the coccygeal vertebræ.

The femur is remarkable for the great size of its smaller (*internal*) trochanter, and for the smallness of its great (*external*) trochanter, but is without a remnant of a *third* trochanter.

The tibia and fibula have their malleoli more enlarged than even in the Makis.

Lastly, the bones of the foot are still more similar, only the os calcis has its posterior (*projecting*) process shorter and more bent inwards; the bones of the first (*great*) toe are proportionally stronger, those of the second toe more delicate, and, lastly, the bones of the fourth toe exceed in length, still more evidently, the corresponding bones of the median or third toe.*

* The skeleton of a specimen in the Museum now before me, and which we considered at the time of its preparation to be the L. Tardigradus, gives the following mea-

The Lori Grele (*L. Gracilis*, Geoff.) appears to me to differ, with regard to its osteography, from the preceding, only in the more truncated form of its body, and more especially in the delicacy and length of its limbs.

The head is shorter, more attenuated anteriorly, and has the temporal fossæ edged, but well separated from each other. On the contrary, the margins of the orbits touch each other; the zygomatic arch is larger at its base or root, and the angular process of the mandible, or dentar portion of the lower jaw, is more in the form of a hook.

In the spinal column the cervical vertebræ (seven in number) have their processes, and especially their spinous processes, less developed. The dorsal (fifteen in number) have their spinous processes less sloping, but close and contiguous; the lumbar vertebræ (nine in number) nearly equal in size, have their spinous processes very much flattened and rounded, and the transverse processes extremely small, as in the Maki Vari, our type of comparison; but the posterior articular processes have a styloid process inferiorly. The sacrum is evidently composed of three vertebræ, the first of which alone articulates with the iliac bones; and the slender coccygeal region has only five or six vertebræ, formed not unlike the phalanges of the fingers.

The thoracic sternebræ consist of nine bones instead of eleven, as in the L. Tardigradus; they, however, resemble those of the Tardigradus in form, only more shortened.

There are fifteen pairs of ribs, nine sternal and six asternal; they are still stronger, larger, particularly at their vertebral extremities, where they almost touch each other.

With regard to the limbs, they are, in respect to the bones which form them, longer, and, especially, more slender.

Thus the humerus equals in length the entire range of the dorsal, and one or two of the first lumbar vertebræ; its deltoid impression is very high on the shaft of the bone, and in addition to the usual perforation through the internal condyle, the anterior and posterior fossæ communicate by a solution of continuity, as in the dog.*

The radius and ulna are still a little longer than the humerus, but they are particularly delicate, and of nearly equal strength, the radius is evidently more bent, and the olecranon process is extremely short.

The hand presents no remarkable feature but its proportional shortness, only equalling about one half the radius; in other respects, and in the difference of bulk, the bones composing it are similar to those of the Lori Paresseux.

The posterior limbs are nearly of the same length as the anterior; the femur is, nevertheless, a little longer than the humerus, it is straight, and has no third trochanter.

The tibia and fibula (which is much more delicate than the tibia) are equally straight, and of the same length with the femur.

The foot is about two-thirds the length of the tibia; the calcanean prominence is still shorter than in the Lori Paresseux, although it holds the same proportion to the other bones.

The skeletons of the Galagos and of the Tarsiers approach more that of the true Makis, especially in the composition of the trunk, being terminated by an elongated tail, and in many other peculiarities which we shall now proceed to point out.

In the Galagos or Tarsiers, characterised by a single pointed nail terminating the toes, the head and its appendages have more relation with those of the Loris, being, however, still more enlarged, particularly in the

surements, and number of vertebræ and teeth:—

	in.	lin.
Snout to sacrum	8	6
Sacrum to tip of tail	2	6
Total length	11	0

	in.	lin.
Humerus, 2 in. 4 lin.; radius, 2 in. 1 lin.; wrist and fingers, 1 in. 4 lin.	5	9
Femur, 2 in. 9 lin.; tibia, 2 in. 4 lin.; ankle and toes, 2 in. 1 lin.	7	2

Number of Vertebræ.

Cervical	7
Dorsal	16
Lumbar	8
Sacral	3
Coccygeal	12
	46
Add cephalic	4
Total	50

Teeth.

	Upper jaw.	Lower jaw.
Incisors	4	6
Canines	2	2
Ant. molars	6	4
Princ. molars	2	2
Post. molars	4	4
	18	18
		18
Total		36

R. K.

* This communication between the foveæ in the humerus may, after all, be accidental, and not specific, since it occurs occasionally in man himself. There are no less than three specimens in our own museum occurring in the perfectly adult and healthy humerus: the opening, there can be no doubt, is congenital, and must have depended on an original deficiency in the cartilage forming the basis of the bone.—*R. K.*

Galago of Senegal; but the cervical vertebræ (seven in number) are like those of the Maki Vari, although the spinous processes may almost be said to be wanting; the dorsal and lumbar vertebræ resemble those of the Maki Vari, and their numbers also correspond, there being thirteen dorsal and six lumbar. Lastly, the sacrum is in like manner formed of three vertebræ, of which the first only enters into the composition of the sacro-iliac articulation; the coccygeal region consists of twenty-seven very long and slender vertebræ.

The cephalic sternebra (hyoid) apparatus is peculiar; it is large, and slightly shield-shaped, like that of the Ouistiti; but besides, the styloid horns are formed of only two unequal portions, arising, as it were, from an enlargement of the base of the laryngeal horns, which may, perhaps, be thus considered as formed of two parts.

The thoracic sternebræ (sternum) and the ribs again approach in their form to those of the Maki Vari, with the exception of size; there are seven sternebræ and thirteen pairs of ribs, of which eight are sternal, with their sterno-costal cartilages very long.

The humerus, also, resembles that of the Maki Vari, which, however, is a little shorter and stronger, with the crests (ridges) more marked; we make the same remark of the radius and ulna, and, perhaps, even still more with regard to the hand, although the phalanges are proportionally longer, and the semilunar bone appears to be still smaller.

The posterior (pelvian) limbs differ considerably; the pelvis, however, is not unlike that of the Maki Vari, the crest of the ilium rises considerably above the line of the sacrum; the ischium is extremely short; the femur, perhaps, a little longer, equalling seventeen of the first spinal vertebræ; the tibia and fibula are shorter than the femur, whilst the foot nearly equals in length that of the femur, and thus constitutes a marked distinction between the Galagos and Makis. The great length of the foot does not, however, so much depend upon the elongation of the metatarsal bones or toes, which retain pretty nearly their usual proportions; but the calcaneum and scaphoid are astonishingly elongated, the calcaneum having some resemblance to the ulna, and the scaphoid to the radius. The astragalus retains its usual form; the cuboid, and even the third cuneiform (which is not unlike a coccygeal vertebra), are also longer than in the Maki Vari.

Those Tarsiers which have two pointed nails on the toes, offer, after all, in their osteography little that differs from that of the Galagos.

It might, however, be observed, that the fibula appears to be a mere thread, reaching only half the length of the tibia, with which it unites, so that the tibia and astragalus enter alone into the composition of the ankle-joint; the hands and feet are proportionally longer than in the Galagos, and the second and third toes are terminated by a distal coulter-shaped phalanx, instead of this being peculiar to the second only, as in the Makis and Loris, whose skeletons we have already examined.

The Descending Scale.

In descending through the series of the Lemurs, departing from our typical Maki, we find the Indris (*Lichanotus Indri*, Gmel.; *Lemur Indri*, Linn.), which, like the Loris, considered by us as forming the first species of the family, are equally deficient in the tail. They are the largest animals of all the Lemuridæ; but their dentar system presents the greatest anomalies.

The skeleton of the Indris presents, upon the whole, a sufficiently singular appearance, partly owing to the truncated appearance of the central or vertebral part, and more especially owing to the great disproportion of its limbs.

The head is, in general, a little longer and more depressed than in the Makis; the jaws are likewise shorter, so that they appear to me to approach the form of the Lori Paresseux. The arrangement of the bodies of the cephalic vertebræ is quite similar to the Lori Paresseux (*L. Tardigradus*), in the manner in which the vomer divides the posterior nasal aperture into two openings; but it approaches more nearly the Maki Vari, in the form of the pterygoid processes, in the smallness of the mastoid processes; the bullæ (*tympanic case*), on the contrary, being greatly distended; in the existence of a considerable foramen for the escape of veins behind the occipital condyle; at the same time the great size of the zygomatic arch, the absence of a malar foramen, and especially the general form of the moveable part of the lower jaw, recalls to us, much more, the arrangement which exists in the Lori Paresseux. The coronoid process of the lower jaw is, nevertheless, still more elevated, the angle more detached, as it were, and the symphysis much more elongated and oblique.

The seven cervical vertebræ form a neck of considerable length, as in the Maki Vari, because the ring of each vertebra is likewise very large; but the spinous processes are elevated, nearly equal in size, placed nearly vertically, and large in all their dimensions, not unlike those of the genus Lori, although placed widely separated, as in the Maki Vari; the transverse processes are peculiar, being placed very much towards the inferior aspect of the vertebræ, with long laminæ looking downwards, particularly that of the sixth.

The dorsal vertebræ, thirteen in number, as in the Makis, have their spinous processes, of medium size, arranged nearly vertically, those about the middle of the dorsal region looking very slightly backwards.

The lumbar vertebræ, eight in number, as in the Lori Paresseux, enlarge considerably from the first to the last but one, as well their *bodies* as their spinous processes, which are vertical and very strong; and even the transverse processes, which increase gradually from the first to the last, which is the largest, and bent so as to look forward.

Four vertebræ enter into the composition of the sacrum, which resembles not a little that of the Gibbons, in consequence of its size, flatness and triangular form, the perfect union of the transverse processes of the four vertebræ composing it, and the spinous processes forming a true crest thickened at its summit.

The moveable coccygeal vertebræ, eleven in number, form a narrow, triangular, depressed tail; the first three vertebræ, provided with well marked transverse processes, which look backwards; towards the fifth or sixth they become sub-cylindrical, and are without processes.

There is no skeleton of these singular animals in our collection, in which the cephalic sternebra (hyoid) is present, and we are unacquainted with its form, both in the *Indri a Long Queue*, and in that of Bennett.

The sternum is short and narrow, seven or eight sternebræ enter into its composition nearly as in the Maki; but the manubrium is, perhaps, still shorter, having at each of its anterior angles an articular surface for the first pair of ribs; the ensiform process is a little narrower.

The ribs are delicate, narrow, compressed, with a double curvature, and are of the same number as in the Maki Vari (*thirteen*); eight sternal and five asternal; the sternal appendages (sterno-costal cartilages) are long, and expanded near their sternal extremity slightly, as in the Maki Vari.

The limbs, as we have already remarked above, are very much disproportioned.

The anterior (thoracic), which are the shortest, resemble a good deal those of the L. Paresseux, except that the hand is very much longer. In fact, the clavicle, the scapula, and even the humerus bears almost a perfect resemblance, with the exception of the length. The bones of the forearm become evidently longer and more delicate, especially the ulna, which is also less arched than the radius; in fact, instead of the radius equalling nearly the length of the humerus, as in the Lori, it is nearly a fourth longer, but the bones of the hand present the chief differences.

First, as we have already remarked, its proportional length is very great, nearly equalling the radius, whilst in the Lori it is only about two-thirds its length. The carpus is always the shortest; but its most remarkable feature is, that fewer bones enter into its composition than in the other Primates; in fact, the semilunar (*os lunatum*), which we have observed evidently diminishing in the Lemurs generally, can no longer be seen in the anterior (*extensor*) aspect, and is just visible on the posterior (*flexor*) aspect; the ninth or intermediate bone, hitherto so characteristic of the Primates, no longer exists in the Indri.

The scaphoid is, on the other hand, much more developed, whilst, again, the pisiform is extremely small; the os magnum loses its importance, the unciform bone taking its place, as it were, by its greater development.

The metacarpal bones and the phalanges of the Indri resemble those of the Gibbons in their length and delicacy, and even in the curvature of the proximal and middle phalanges, flat below and convex above. The distal phalanges are all large, and flattened at their extremities. In other respects the fourth finger is still the longest, not only as a whole, but in all its individual portions, with the exception of its metacarpal bone, which is nearly the length of the third, if not surpassed by it. The indicator finger is (with the exception of the thumb) the shortest and most delicate.

The posterior (pelvic) limbs of the Indri are still more peculiar than the anterior.

The iliac bones articulate obliquely to nearly one-half their whole length, with two or three sacral vertebræ; the iliac fossæ, and especially the external, are much larger than in any of the Makis, and its anterior margin (crest) large and curved at its spine, advances as far as the level of the seventh or last lumbar vertebra. The ilio-pubic spine is really a process, and presents a flattened form. The pubic portion of the ossa innominata, in respect to its horizontal ramus, is still less oblique than in the Makis, and the pubic articulation (*symphysis*) is longer. The ischiatic portion, always very short, has its tuberosity more marked and flatter, so that the entire form of the pelvis, joined to that of the trunk, generally indicates a greater tendency to the sitting and erect position, as in man and the higher Apes.

The femur of the Indri differs only from that of the Makis, in a length proportionally greater than even in the Lori Grele; it equals, in fact, all the dorsal and seven of the lumbar vertebræ, and is nearly double the length of the humerus, a proportion not existing in any other animal with which I am acquainted.

The tibia and fibula have also the same resemblance, but are less disproportioned; the foot is, like the hand, long and narrow; the proportion, however, of the fingers and of the bones which compose them, presents no sufficiently well-marked differences from the structure of the Makis.

We are familiar with only another species of the Indri, viz., the Indri a Bourre (*L. Laniger*, Gmel., *Indri a Long Queue*, Desm.), whose cranium, at first sight, seems very different from that of the common Indri, more resembling that of the Lori Paresseux on account of the extreme shortness of the jaws; but, on minute examination, we find posi-

tively the same peculiarities, only the lachrymal canal (*nasal duct*) is less facial, being nearly in the orbitar margin; the orbits are larger; the inter-maxillary bones are still smaller; and the lower jaw has its angles larger, more rounded, while the symphysis is longer and more oblique.

With regard to the other parts of the skeleton I have only seen a portion of the limbs, and they preserve all the peculiar features of the Indri; the internal condyle of the humerus is perforated, and, in like manner, scarcely equals half the length of the femur; the radius and ulna are long and delicate; there are only eight carpal bones; the unciform is large; the metacarpal bone of the ring finger (*fourth*) is, in this case, evidently much more massive and longer than that of the middle finger (*third*). The femur and the tibia and fibula are more nearly equal; they are longer and more delicate, especially the fibula, and the bones of the tarsus hold their usual proportions.

The Maki diademe, which Mr. Bennett has lately formed into his genus *Propithecus*, is familiar to me only in respect to one head, and this is, that of a young animal (the dentition being in our second epoch), so that it is of little use to enter into particulars regarding it. I may remark, however, that it bears a strong resemblance to that of the Indri of the same age, only the snout is evidently shorter, the inter-orbitar space is larger, and the inter-maxillary bones are more developed.

The Aye-Aye (*L. Psilodactylus*, Linn.) still presents another important modification; but this is so remarkably developed, as, in some degree, to constitute an anomaly, and only to be certainly explained and understood by an acquaintance with its habits: we unfortunately are only familiar with the skeleton of the head and some portions of the limbs.

The head, considered as a whole, is still shorter than that of the Indri diademe, (*Propithèque a diademe*, Bennett,) with which it, nevertheless, has some resemblance, by a slight curve in the basilar and frontal lines: the frontal line being still more strongly and regularly arched from the occipital crest to the extremity of the nose, so as to bear a strong resemblance to the genus Felis, or the Cat. In other respects, the series of the bodies of the cephalic vertebræ, the pterygoid processes, the advance of the superior occipital beyond the crest and on the vault of the cranium, forming a large epactal bone: the extent and convexity of the parietal bones, their extensive articulation with the wings of the posterior sphenoid; the great size and convexity of the frontal, which articulates with the parietal bones in a nearly straight line, are all repeated in the organisation of the Aye-Aye, as already shown to exist in the Indri diademe. The inter-orbitar space is, however, still more considerable, separating to a great extent the orbits; and the nasal bones are evidently large, and particularly broader.

The upper jaw still closely resembles that of the Indri diademe; the lacrymal bone is semi-facial, the orifice of the nasal duct being seen on the facial aspect of the bones and not in the orbits; the malar bone, nearly of the same size, but still less swollen externally.

The palatine, which ascending enters to a considerable extent into the composition of the orbits, has not its free margin bordered, but is perforated with a large oval foramen, as in many of the Makis. Lastly, what renders the Aye-Aye most remarkable is, that the ascending branch of the inter-maxillary bones, very much developed, extends upward between the nasal and maxillary bones, so as to reach and touch the frontals, as in all mammals which use strongly the upper incisors (if these remarkable teeth really are analagous to the incisors in other animals); and this, whether the animal belongs to the Rodentia or not. In respect to the incisive foramina, they are of medium size and oval-shaped.

The lower jaw (particularly the mandibular or dentar portion) presents greater differences than the upper jaw, when compared with the other species of Makis: the rocky bone (*pars petrosa of the temporal*, hum. anat.) is, nevertheless, still oval-shaped, of medium size, and its posterior aspect presents a considerable sinus, in which lies a lobe of the cerebellum. The mastoid bone (*mastoid process of the temporal*, hum. anat.) is of considerable size, but not excavated with sinuses; the bulla (osseous tympanum) is swollen, and slightly compressed; the external auditory canal is large, and rather deep; and the squamous bone (*squamous portion of the temporal*, hum. anat.) extends more on the side of the cranium. The zygomatic process strong, short, sub-caniculated externally, with a large articular surface, is nearly flat and without a condyloid process at its inferior root; and more particularly the mandibular bone (*lower jaw*, hum. anat.) is very different from that of the other Lemuridæ, although it slightly resembles that of the Propithecus (*Maki diademe*). In brief, the ascending ramus, which is large and very short, and as it were horizontal, being at the same time much apart, causes the condyles, which are oval-shaped longitudinally, to lie nearly in a longitudinal direction (that is, nearly the reverse of the Carnivora). The coronoid process of the lower jaw is but slightly elevated. The angular process is in the form of a rounded plate of bone; by no means angular. Lastly, the symphysis, nearly linear, is sub-vertical, and entirely occupied by the alveoli of the incisive teeth.

In respect to the other parts of the skeleton of the Aye-Aye, I have already remarked that I have only had an opportunity of see-

ing the entire forearm and carpus; but these parts alone, suffice to put beyond a doubt the precise position in which this animal stands in the family to which it belongs. The radius and ulna are highly finished (fully developed), strong and arched; the head of the radius is perfectly circular, and the distal extremity, oval and enlarged, articulates with the scaphoid and os lunatum. The ulna, which has its olecranon process rather short, with the sigmoid articular surface placed somewhat anteriorly, articulates at its carpal end with the cuneiform bone.

There are *nine* carpal bones, as in the Primates: the os lunatum being rather more developed than in the Indri. The ninth or intermediate bone, of considerable size, is in its usual situation, that is, between the scaphoid and trapezium.

With regard to the fingers (the bones or skeleton of which we have not been able to see distinctly, in consequence of their being covered with skin,) we can perceive that it is the fourth (ring finger) which still continues the longest; that the second (indicator) is more delicate, and shorter; the first (thumb) being the strongest. And this arrangement also holds with regard to the feet; and with even a greater disproportion in the length of the limbs, and an elevation of the tarsus, which makes me suppose that the calcaneum and scaphoid must be very long.

In fact, whilst occupied with the osteography of the Aye-Aye, M. Laurillard, keeper of the anatomical galleries, having made a search in our collection for all the bones we possess of the Aye-Aye, sent me, perfectly identified, by being ticketed, the four principal bones of the tarsus, namely, the *astragalus*, *calcaneum*, *scaphoid*, and *cuboid*, which I was not aware that M. Cuvier had, no doubt long ago, caused to be extracted from the stuffed skin in the zoological collection, as I myself had done in respect to the *head*, the *bones of the forearm and carpus*. The examination of these bones confirms my supposition with regard to their great length, which nearly equals that of the Tarsiers and the Galagos. They are also nearly of the same form, only stronger, which causes them to appear proportionally shorter: a fact which I shall more fully prove in my memoir on the Aye-Aye, which I shall publish at a future period of the work, when engravings of all the parts of the skeleton which I have been able to extract from the stuffed skin shall be given.

VACCINE EPIZOOTIC.—In the year 1770, the vaccine epizootic was so malignant that his Majesty, George the Third, made "the distemper among horned cattle" part of the subject of his Address upon opening Parliament, on January 9th.

COURSE OF LECTURES
ON THE
PHYSIOLOGY AND PATHOLOGY OF THE BLOOD,
AND
THE OTHER ANIMAL FLUIDS,

DELIVERED IN THE SESSION OF 1839-40,

AT THE

School of Anatomy adjoining St. George's Hospital.

BY HENRY ANCELL, ESQ., SURGEON.

LECTURE XVII.

Injection of substances into the veins, and their action upon the economy when mixed or combined with the blood.—Air and gases.—Water.—Oil and viscid substances.—Alcohol.—Poisons; medicines; articles of diet; animal secretions; pus; animal and vegetable putrid matters; diseased blood.—Period which elapses before active substances take effect.—Rapidity with which the round of the circulation is made.—Infinitesimal quantities.—Action upon and accumulation in particular organs.—Diseases from morbid states of the blood.—Modes in which death is occasioned by vitiated blood.

GENTLEMEN:—There cannot remain a shadow of doubt upon your minds, that various causes incessantly in operation are capable of modifying, directly and indirectly, the state of the living blood, both as to its qualities and the quantity contained in its vessels. The important effects which result from alterations in its quantity have been described, and it is now my object to show, that by far the greater number of the symptoms of diseases are capable of being produced by alterations in its qualities. That, in fact, they can be so produced at will by the admixture of foreign and deleterious substances with the blood as it circulates. At the same time this subject is in the most crude and unsettled state; we were long taught to believe that agents of every description act on the animal economy through "the sentient extremities of the nerves," and not through the blood. The facts which militated against this erroneous dogma, so far as the practice of medicine is concerned, were totally disregarded; and as they are now dispersed, it is impossible at once to collate and to methodise them. Upon the present occasion I place before you a table of most of those substances which have been injected into the blood of living animals, and I propose to give a condensed account of the multifarious effects of blood thus modified, upon the organs and functions of animal life.

At the dawn of medical science it was believed that poisons, introduced into wounds, are carried into and combined with the general mass of the blood. Celsus and Galen referred this absorption to the veins, and their opinion prevailed for seventeen centuries; but the earliest experiments recorded of the injection of substances into the blood are, I believe, by J. G. Wahrendorff, in 1642, who intoxicated dogs in this way with wine, and tried the effects of other substances. In our own country, Dr. Christopher Wren of Oxford, in 1665, first suggested, in a letter to Boyle, the introduction of liquids into the veins, having himself performed the operation on dogs, and ascertained that opium applied in this way "stupifies but does not kill, being soon circulated in the brain;" and that a large dose of sulphuret of antimony causes an animal to "vomit up life and all." Soon after this Francassati of Pisa, and Fabricius and Schmidt of Dantzic, Courten and others, made similar trials, extending them to the human subject. The latter asserts that he cured syphilis, gout, apoplexy, and plica polonica in this way. The subject was mixed up with that of the transfusion of blood; the most extravagant notions were entertained, and, probably, unwarrantable experiments performed, the natural result being to cast discredit upon the whole procedure. Nevertheless, the most eminent physiologists, among whom I may mention Baglivi, Petit, Haller, Fontana, Portal, Nysten, Orfila, Magendie, and Christison, have adopted this method as one of the best for the purpose of ascertaining the effects of agents upon the animal economy. At present Mr. James Blake in this country, and many of our continental brethren, are pursuing the same train of investigation. I have selected what appear to me to be the more accurate, the more interesting, and the more important experiments. Many of them speak for themselves, and as a whole you will form your own judgment whether or not they unveil the truth respecting the *seat*, and thereby open a path towards attaining a better knowledge of the *nature* and *treatment* of diseases, than that which has hitherto been in vogue.

Table XXIII.

Effects of Substances on the Animal Economy after admixture, by injection, with the Circulating Blood. With Authorities.

1. *Atmospheric Air.*—The sudden and forcible introduction of a large quantity into the veins, from 15 to 48 inches for dogs, according to their size, and much more for larger animals, proves almost instantly fatal. During its introduction a whizzing sound, and afterwards a gurgling, is heard in the region of the heart, synchronous with its systole, produced by the action of the organ agitating air with blood; its most characteristic sign. Violent agitation, tumultuous pulsations in the chest, sharp cries, simultaneous syncope and death by inordinate distension of the parietes of the right cavities. Their contraction being prevented, the blood is not propelled into the lungs; the cessation of the pulmonary is followed almost instantaneously by that of the general circulation, and all the organs simultaneously cease to receive the vivifying principle.

Post-mortem.—The right cavities of the heart, and especially the right auricle, distended with air and frothy blood like an inflated bladder; the left cavities nearly empty, but air has sometimes found its way therein, particularly in large animals whose capillaries are large; in some cases air is also visible in every vein throughout the body, including the coronary veins, when its absence in the left cavities and pulmonary veins indicates that it is forced directly into the venous system, and does not make the round of the circulation.

A considerable quantity of air may be introduced more slowly, and at intervals, without producing immediately fatal results, say even seventy to one hundred cubic inches. The symptoms are cries, frequent and violent efforts to inspire, cough and expectoration of a frothy fluid, feeble fluttering and often imperceptible action of the heart, convulsions, tetanic spasms, involuntary ejection of urine and fæces, and the sounds before described. There may be only temporary inconvenience, or in a few hours or as late as several days, death, commencing by the lungs, from the mixture of air and blood preventing free transmission through these organs. P.M. In addition to or without the appearances already mentioned, the pulmonary artery is distended and gorged with frothy blood. Air injected into the carotid artery, gently, and in small quantity, was followed by no marked effect, but otherwise it constantly produced the phenomena of apoplexy. The functions of the brain were instantly abolished with universal spasmodic rigidity of muscles, neither mechanical nor chemical irritants producing the least expression of sensibility, but the phenomena of organic life continuing, pulse strong and frequent, respiration large, arterial blood of good colour, ultimately stertor and death in three hours, the result of pressure in the capillary system of the brain. This may also occur when the injection is made by the veins. When these operations do not prove speedily fatal, air is not to be found in any part of the vascular system. Nysten says it is dissolved by the blood, and blood being thus altered in its vital composition, the animal may sink in a state of adynamia. A small quantity of air may be introduced into the veins of

animals or man with liquids, without any appreciable effects; but there are a few authentic cases of patients having died suddenly from the entrance of air during surgical operations, the symptoms and post-mortem appearances being analogous to the above; and there is reason to believe, from cases recorded by the older authors, that air has developed itself spontaneously in the sanguiferous system, and has sometimes occasioned sudden death by apoplexy or otherwise.—*Nysten, Cormack, Magendie, &c.*

2. *Oxygen Gas.*—A considerable quantity, very pure, injected into the jugular of a dog. Most terrible cries, respiration rapid and most intensely difficult, limbs became gradually stiff, fell asleep, and died in less than three minutes. P.M. The heart more irritable than usual, and continued so more than an hour; right auricle of a florid red colour; a considerable quantity of bright vermilion-coloured frothy non-coagulated blood in the right heart. Blood in left ventricle, aorta, and arteries, of a rose colour, and mixed with bubbles of air.—*Girtanner.* When sudden death does not occur from distension, oxygen, owing to its great solubility, may be injected in larger quantity than atmospheric air, without consecutive fatal results. All the organs slightly stimulated; does not enfeeble an animal like common air; pulse more frequent, or strong and less frequent; blood constantly rendered more rapidly coagulable.—*Nysten.*

3. *Azote.*—A small quantity destroyed a dog in 30 seconds. Heart and muscles had almost entirely lost their irritability.—*Girtanner.* Cries, convulsive rigidity of limbs and trunk, then calm respiration, slow pulse which in a minute became insensible, the motion of the heart continuing very feeble, opisthotonos, death in three minutes. A much smaller quantity necessary to destroy than of air, and animals apparently dead from this gas could never be resuscitated. Has a sedative action upon the contractile power of the heart; but to produce sudden death this must be promoted by its mechanical action. Dissolved in the venous blood it alters its vital properties, and prevents the full action of the air in respiration.—*Nysten.*

4. *Hydrogen Gas.*—A small quantity injected into the jugular had no appreciable effect; a larger quantity always produced embarrassed breathing, as from some foreign body traversing the capillaries of the lungs; a quantity short of occasioning death by distension had a fatal effect from pulmonary engorgement in 11 hours. Blood drawn from the carotid after the injection of this gas into the veins, the respiration remaining free, was slightly darkened in colour for a few moments, but recovered its vermilion hue in three or four minutes.—*Nysten.*

5. *Carbonic Acid Gas.*—Injected into the jugular the animal first became sleepy, and died in 15 minutes. Right heart filled with thick blood, partly coagulated; blood in left heart of a deeper colour than natural; heart and muscles lost their irritability.—*Girtanner.* Death by mechanical distension not easily produced in consequence of its great solubility, 64 cubic inches being absorbed without any remarkable symptoms; injection into the carotid destroyed sight, hearing, sensibility, and the faculty of locomotion; the limbs became rigid, respiration deep and stertorous, pulse subsided by degrees, death in three or four hours. P.M. Neither gas, nor any other lesion in the brain; all the organs healthy; the whole effect referred to distension of the cerebral vessels. The blood flowing through the carotid artery shortly after the injection of carbonic acid into the veins was brown, but soon recovered its natural tint.—*Nysten.* A small quantity of water strongly impregnated with this gas, injected into the jugular, produced occasional vomiting, liquid alvine dejections, succeeded for a few hours by a state of faintness and inertia, or somnolency and intoxication, with plaintive respiration. Perfect recovery in about five hours, having made a great deal of urine.—*Gaspard.* Air which has been respired, when injected into the veins more fatal than common air, owing to the admixture of carbonic acid gas.—*French Commission.*

6. *Chlorine.*—Cries, sufferings, dyspnœa, respiration then slow, agony, and death in about three minutes. P.M. Blood quite liquid; right side of the heart contained neither gas nor clot.—*Nysten.*

7. *Phosphuretted Hydrogen.*—Acts like common air; but a smaller quantity being necessary to produce sudden death, it would appear to have a sedative influence. An evidence of its decomposition, and of the solution of a part of its phosphorus by the blood, is also furnished by the gas found in the heart being no longer inflammable. Blood drawn from the crural artery of an animal dying with pulmonary and nervous symptoms, after the injection of this gas, was black; this effect being mainly attributable to the cessation of the respiratory changes, although the gas itself renders the vermilion hue rather dull.—*Nysten.*

8. *Nitric Oxide Gas.*—A most energetic poison; combines with venous blood; changes it to a chocolate brown colour; prevents its coagulation, and so alters its qualities that it will no longer take the arterial colour in the lungs, and, thus altered in nature, it is in vain that it circulates in the organs; their life is extinguished for want of pure arterial blood. Death from this gas is, therefore, a true asphyxia, prompt or slow, according to the quantity used. When slow, the re-

spiratory changes continue for a time, but in an incomplete manner, till at last all the blood is altered in the course of its circulation. All the phenomena which precede death are due to the absence of the vivifying qualities of arterial blood.—*Nysten.* Not found so active by *Dr. Davy.*

9. *Hydrosulphuric Acid Gas.*—May be injected into the venous system in small quantity without fatal results, but it is invariably followed by general feebleness both in the animal and vital functions, particularly in the heart and muscles. Being extremely soluble, it never destroys by distension. In larger quantity, say two or three cubic inches, it is carried to all the tissues, destroys their vitality, and the animal sinks with general adynamia. Precursory convulsions and tetanus are sometimes the result of its first impression on the brain and spinal marrow, since any disturbance of this system will cause convulsions, and the latter are the frequent consequence of the most debilitating causes: effects altogether analogous to those of the respired gas.—*Nysten.* Often renders the blood viscid, greenish, or brownish, and incapable of coagulating.—*Christison.*

10. *Carbonic Oxide.*—Gives the blood a brownish tint, and produces temporary intoxication in animals.—*Nysten.*

Many of the gases do not produce so powerful an effect on the animal economy, when introduced directly into the venous blood, as when respired. It is the function of the lungs to eliminate gases from the blood; but Nysten could detect only a small quantity of the injected gas in the air expired. Yet the above experiments (4, 5,) show that the most deteriorated blood may be wholly or partially purified during the continuation of healthy respiration.

11. *Water.*—Large quantities may be injected into the veins without fatal effects. A dog appeared to bear well three pounds and a half at first; it did not remain long in the vessels; a dense vapour and thin froth proceeding from the mouth, and the whole body being bathed with liquid. Death in two hours. P. M. Serous effusion tinged with blood in the pelvis, bloody effusion in the cellular tissue of the diaphragm, congestion of the lungs, ecchymosed spots on the surface of the stomach. The vessels may be so distended with water that an animal cannot bend his limbs, nor move them without the greatest difficulty, just as a flexible tube will become straight and rigid when greatly distended with liquid, a mechanical effect which may be observed in plethoric persons. When water is injected after taking a quantity of blood, so that without diminution of bulk the remaining fluid is rendered more aqueous, mechanical effects, by virtue of the latter quality, will result, but more particularly "the affections and instincts are changed;" from being noisy and uncontrollable, an animal becomes tranquil. About a pint thrown into the jugular of another dog lessened the force of the circulation. "While the quantity of fluid augments the pressure on the arterial parietes, the dilution of the blood diminishes the force of the heart, so that what is gained on one hand is lost on the other." Large quantities were injected into the veins of healthy horses with comparative impunity, but it always brought on increased respiration, slight colic, abundant urine, and pulmonary transpiration.—*Magendie, Dupuy.* In the human subject, water injected into the veins of persons affected with hydrophobia calmed the excitement, but did not prevent the patient dying. In impending death during the collapse of cholera, in which the aqueous part of the blood is deficient, seven pounds were injected at once into the median basilic, and fifteen pounds in nine hours, the patient recovering. Mr. Blake states that it increases the force of the circulation and pressure, the result obtained by Magendie probably depending upon the animal having been in a sinking state.

12. *Olive Oil.*—Half a drachm into the jugular of a dog, followed by dyspnœa, the inspirations being quickened, but life not compromised. On repeating the dose, agitation, struggling, imminent suffocation, death. P. M. Lungs presented all the appearances of recent pneumonia; did not collapse nor crepitate; remarkably dense and consistent, and on cutting them a reddish frothy fluid ran out; the blood manifestly more viscid than natural, black in the crural artery, explained by the obstacle to the pulmonary circulation; pulmonary cells gorged with a thick liquid, in the midst of which the oil was detected. In another experiment, half a drachm embarrassed the breathing, but did not occasion death; invariably produces an obstacle in some part of the lungs. In one case, after all the symptoms of pneumonia, the animal became calm, the fever subsided, and resolution was complete.—*Magendie.* "I have injected pounds of oil into the veins of large animals, as the horse, ox, ass; they were exceedingly ill, but did not die."—*Dupuy.*

13. *Cerebral Matter.*—Two ounces, in the form of an emulsion, into the jugular of a dog; its effects felt immediately, the animal fell on his side; respiration quickened, convulsive agitation, plaintive cries, death. P.M. The same state of lungs as after death from olive oil; blood in the crural artery scarlet; injected into the vena portæ, and submitted to the action of the liver, it did not prove deleterious; into the carotid artery,—occasioned violent struggling, great anxiety, rolling about, head bent from the side where the injection was made; eye of the same side convulsed above, and agitated with a peculiar tremor, giving a most re-

markable expression, the whole being the result of a mechanical obstruction in the capillaries.—*Magendie.* Four ounces of diluted cerebral matter into the veins of the forepaws of two dogs; in two minutes, death without even a convulsion. P.M. Blood coagulated in the heart and vessels; in the cavities of the heart large clots, so in relation to the valves as to prevent their action; petechial spots on the surface of the lungs, believed to have occurred after death. "Only corrosive sublimate will produce so speedy coagulation of the blood as this substance; there is no obliteration of the capillaries, only coagulation of blood."—*Dupuy.*

14. *Metallic Mercury.*—One ounce and a half into the jugular of a dog; soon afterwards a dry, short cough, at intervals; no other effect for two days, then great difficulty of breathing, and a noise like that of a broken-winded horse; died on the fourth day with orthopnœa. P.M. About a pint of bloody fluid in the thorax; pleura in most places raised from the lungs, in the form of blisters, some larger, some smaller than a pea, most of which contained globules of mercury and sanies; some particles of mercury in the midst of the coagulated blood in the right ventricle and pulmonary artery, but none in the firm coagulum in the left ventricle, whence it appears that the mineral passed no farther than the extremities of the pulmonary artery; none in the trachea, but the divisions of the bronchia were filled with sanies, on washing which away, mercurial globules seen in the branches of the pulmonary artery below.—*Dr. Moulin. Phil. Trans.* 1690. Confirmed by *Magendie*, in whose experiments there were all the signs of double pneumonia from grey hepatisation, with globules of the mineral in the centre of minute drops of pus. Gaspard found that injected into the crural vein it always produced inflammation, hepatisation, and suppuration of the lungs; into the crural artery, tumefaction, œdema, and large abscesses in all the tissues of the limb, the abscesses containing mercury, pus, and sanies; when injected into the left carotid of a sheep, all the organs on the left side became inflamed, and there was suppuration of the left eye; he concludes that mercury cannot circulate through the capillary system during life.

15. *Gum.*—Dissolved in water and coloured. Jugular vein of dogs. So long as the injection traversed the large venous trunks no disorder; as soon as it arrived at the minute ramuscuii of the lung, its viscidity ceased to be in just proportion to the capacity of the tubes—circulation then ceased—death. P. M. On cutting the pulmonary parenchyma perpendicularly to the direction of its principal vessels, they were invariably found stuffed with the substance injected.—*Magendie.*

16. *Starch.*—Suspended in distilled water. Jugular of dogs. No immediate interruption to the pulmonary circulation, but the animals died the next day with pulmonary obstruction. P. M. Lungs the only seat of morbid alterations; did not collapse, and accordingly more voluminous than natural; contained little air; less supple: on microscopic examination of the portion of lungs obstructed, the globules of starch were detected. These are larger than blood corpuscles. The animal died of obstruction of the pulmonary circulation and pneumonia.—*Idem.*

17. *Fecula of the Mirabilis Jalapa.*—Its particles are only 1-3600th of an inch in diameter, and accordingly, when used sufficiently diluted, no obstruction occurred. When very thick, intense dyspnœa, and death in a few hours. To be ascribed to the viscidity of the fluid, and not to the size of the granules: the appearance of the lungs precisely the same as in those of animals killed with oil, or any other viscous substance.—*Idem.*

18. *Charcoal reduced to an impalpable powder.*—Mixed with thin gum water, and injected into the jugular: the animal at first tranquil, but inspiration accelerated; a little more produced agitation, cries, and almost instant death. P.M. All the tissues had a manifestly black colour; even the mucous membrane of the gums and air passages; vessels of the mesentery and intestines marked by blackish lines; pulmonary tissue manifestly bronzed. Death referred to the quantity rather than to the nature of the fluid. In another case cough with want of appetite, but recovery.—*Idem.*

Courten's experiments in 1678, Delincourt's and Gaspard's, all tend to establish the fact, that crude substances in any notable quantity, however introduced into the blood, are arrested in the lungs; and by the facts above recited, we are thrown back upon the principles of the Boerhaavian school, in which it was taught that a certain degree of cohesion or viscosity is necessary for the circulation of the fluids; and that when this viscosity is increased, so as not to admit of the due separation of the particles, by the action of the heart and arteries, an *obstruction* is formed.

19. *Alcohol.*—Introduced into the jugular and crural veins of animals, produced effects according to its quantity. Half an ounce instantly killed them, and the blood was found very much changed; its appearance resembling milk that is turned sour. The lungs were reddened, and firmer than natural. The same quantity diluted with four or five times its weight of water, was followed by complete intoxication, loss of motion, insensibility, life only shown by abdominal breathing, and a scarcely perceptible pulse. One drachm diluted made the animal stagger for a few minutes, appearing

soon afterwards as if nothing had happened. Return to health was in the ratio of the elimination of the alcohol with the pulmonary transpiration. By watching, and repeating the last experiment as soon as the vapour from the lungs ceases to afford the alcoholic odour, an ounce may be passed through the blood of a dog weighing 30 lbs. in an hour. The same quantity diluted and injected at once stopped the respiration, and the heart ceased to pulsate in two or three minutes; and after death the blood was always altered, having a creamy appearance, and being uniformly thickened, but not grumous, as when pure alcohol is used. No modification of these effects of alcohol after dividing the eighth pair of nerves. These experiments are said to prove, that concentrated alcohol produces a chemical action on the blood; that diluted alcohol injected into the veins occasions immediate inebriation; that intoxication subsides as the alcohol is removed from the blood; that the degree of intoxication is in proportion to the quantity of alcohol received into the blood;—that extreme intoxication and death coincide with a manifest alteration of the blood, and very slight effects on the solids. What are the phenomena of intoxication? the nervous symptoms? but the symptoms of a disease of the blood?—*Segalas.*

20. *Œnanthic Æther.*—Aroma of wine, 3j., with an equal portion of water. All the appearance of drunkenness soon occurred; stupor, stertorous breathing, death in three-quarters of an hour. P. M. On incising the muscular parietes of the chest, liquid blood flowed, the lungs collapsed, but their density and weight were augmented from engorgement, but not hepatisation; no fibrinous clots, brownish patches on the internal parietes of the vessels from imbibition of the colouring matter and some of the elements of the blood; liver, spleen, and kidneys, contained a greater quantity of black blood than usual; capillaries of the intestines distended with fluid blood; non-coagulable blood circulated everywhere, and the whole economy was affected.—*Magendie.*

21. *Phosphorus.*—Two grains, dissolved in four ounces of oil, and a portion injected into the vein of an animal. On passing through the lungs, and coming into contact with atmospheric air a few seconds afterwards, thick white fumes, luminous in the dark, escaped by the nostrils, but the animal necessarily died from the increased viscidity of the blood, occasioning capillary obstruction in the lungs.—*Idem.*

22. *Æther.*—A disposition to sleep, and a kind of drunkenness, are the effects on the nervous system, of blood imbued with this substance, but it is rapidly transpired by the lungs; when phosphorus and æther are introduced together into the circulation, the fumes of the former are not perceived in the breath; the vapour of the æther dissolves the phosphorus, as it does out of the body.—*Idem.*

23. *Ammonia.*—Twenty drops of weak ammonia in an ounce of water into the jugular of a sucking-pig. Evacuation of urine and solid stools, then restlessness, debility, fever, with rigors; abdomen painful on pressure; in an hour mucous and bilious stools; in 4½ hours a brown stool, mixed with grumous blood; after this, return of appetite; the next day dejections still liquid; languid for a week, without any decided disease, and perished after 9 days. P. M. Petechiæ, or ecchymosis in the heart, intestines, and abdominal parietes; appendix vermiformis red, tumefied, inflamed in its mucous and muscular coats, with an appearance of suppuration in the interior; 25 drops produced dyspnœa in a puppy, and symptoms analogous to the above, but recovery took place; 44 drops occasioned a species of syncope or suffocation, then the same symptoms, after which recovery. The introduction of small quantities of ammonia into the blood is dangerous, and even fatal, but the effects are not identical with those from putrid matters.—*Gaspard.* The gas produced moans, cries, difficult respiration, and rapid death from its irritating qualities, the blood remaining liquid in both ventricles.—*Nysten.* On injecting 3j. pure, the legs were spasmodically extended; convulsions and death in 10 minutes.—*Orfila.* One drachm mixed with five of water, the alkali was detected in the halitus from the lungs 4 seconds afterwards; it stopped the action of the heart in 25 seconds; the altered blood circulating in the coronary arteries produces death by acting on the contractility of the heart.—*Blake.*

24. *Potassa.*—Oil of tartar injected into the veins of an animal. Complained much, swelled, and died; the blood was not curdled, but, on the contrary, more thin and florid than ordinary, "which seems to hint that too great a fluidity of the blood, as well as its coagulation, may cause death."—*Francassati.*

25. *Soda.*—A concentrated solution of sesquicarbonate injected into the jugular of a dog produces rapid death. P. M. A blackish liquid wets the scalpel, having neither the aspect of venous nor of arterial blood, the tissues deeper in colour than ordinary, as if they had imbibed new materials from the blood; lungs brownish, firmer, heavier, their tissues more humid, gave out a dull brown liquid on pressure, the aqueous part of the blood, with some of the colouring matter, having exuded into the cellular structure; no induration, properly so called, because the blood has lost the power of coagulating; sanguinolent fluid in pleuræ; black blood holding in suspension a few fibrinous flocculi, but no clot in the right ventricle; non-coagulable blood in the aortic

system; blood, fluid in the liver and spleen. Notwithstanding the rapidity of death, the whole blood appeared to be modified simultaneously in one of its most important properties, and transudations occurred wherever capillaries existed; effects attributable to non-coagulability than which no pathological appearance is more important; it occurs in typhus, and the most deadly epidemics, and whenever the liquid drawn from a vein remains fluid, we may be sure of the fatal termination of a disease.—*Magendie.* Soda arrests the circulation in the lungs, and no blood is sent to the aortic system, accordingly the pressure of the circulating blood in the arteries must be diminished nearly simultaneously with the stoppage in the lungs; the arterial pressure began to diminish in 6 seconds after the introduction of 15 grains in 6 drs. of water into the jugular. It may be inferred that the obstruction occurs a little sooner. When the circulation through the lungs is diminished, the pressure in the veins is increased; this took place in six seconds.—*Blake. Vide Nitre.*

26. *Nitric Acid.*—Diluted and injected into the crural or jugular of dogs. Died presently; all the blood in the vessels fixed; that in the gut not so well; vessels in the lungs broken. Suggests that apoplexy, being often caused by a like coagulation of the blood, might be cured by a timely infusion of some dissolvent into the veins.—*Francassati.* The blood in all the veins, as far as the heart and lungs, coagulated.—*Haller. Blake.*

27. *Sulphuric Acid.*—Not so rapid in its effect as the former; animal foamed like an epileptic; dyspnœa; after death, blood thick and grumous, like soot.—*Francassati.* One drachm diluted:—the functions simultaneously suspended in a few seconds, one or two convulsive motions, and life was extinct. P. M. Brownish livid spots in lungs; right cavities of heart and pulmonary artery full of clots; left ventricle empty.—*Magendie.* A few drachms of very weak acid caused instantaneous death, and the blood was non-coagulable.—*Idem.*

28. *Chloride of Barium.*—Seventy-five grs. in six drs. of water, into the jugular of a dog. Blood received from the carotid artery from 3 to 7 seconds afterwards, at the expiration of which time the action of the heart was arrested. This blood of the carotid was found to contain a greater proportion of the salt than that of the *left* cavities of the heart, and that of the right cavities gave only a very slight trace. Hence the blood, containing the greatest proportion of the salt, had passed through the aortic arch in less than 7 seconds, and before the action of the heart was arrested. It commenced to pass through the carotid in less than 5 seconds after its introduction into the jugular.—*Blake.*

29. *Nitrate of Potassa.*—Fifteen grs. in six drs. of water into the jugular of a dog. In 10 seconds the pressure of the arteries, as measured by the hæmadynamometer, began to diminish, and continued to do so rapidly in consequence of the action of the heart being suddenly stopped. Continued struggling, and respiratory movements for 20 minutes after the heart had stopped beating. Quite sensible and free from convulsion till death, which happened in 45 seconds. One minute and a half after the injection the right auricle was still pulsating, not the slightest contraction could be produced in any other part of the heart, even by the galvanic stimulus; a considerable quantity of blood in the left side of a bright scarlet colour; dark blood in the right side. The immediate effects of a very weak solution are dyspnœa, and irregular action of the heart; after a short time the pulsations becoming quicker, and the pressure on the arterial system increasing. This was the effect of one or two grains. Three grains stopped the action of the heart in 25 seconds.

Nitre is one of a class of substances which acts on the contractility of the heart. The time which elapses before the effect, dyspnœa indicating the passage of the substance through the lungs, and occurring before the heart is affected, and the right side of the heart retaining its irritability after death, are so many proofs that the effect depends upon the blood as it circulates in the coronary vessels, and not upon the mass passing through the cavities of the heart. All the substances which act in this way change the composition of the blood.—*Blake.*—30. *Arsenite of Potassa.*—31. *Carbonate of Potassa.*—32. *Iodide of Arsenic.*—33. *Infusion of Galls.* Act upon the contractility of the heart through the blood.—*Idem.*

34. *Oxalic Acid.*—Eight and a half grs. introduced into the femoral of a dog caused death in 30 seconds, but the poison could not be detected in the blood of the iliac or cava immediately afterwards. As the blood possessed its usual properties, it is inferred that the poison was decomposed within the vessels. — *Coindet* and *Christison.* Acts through the blood upon the contractility of the heart.—*Blake.*

STATISTICS OF VACCINATION.

To the Editor of THE LANCET.

SIR:—I forward for insertion in THE LANCET a statistical calculation relative to vaccination. As I believe no similar calculation has been hitherto made, it may be found interesting at the present time. I remain, Sir, your most obedient servant,

JOSEPH CURTIS, M.R.C.S.,
Registrar of Births and Deaths.
Camden Town, June, 1840.

In that part of my district which is situated in Camden Town, I registered, in the year 1839, 163 births; of these, 34 have left the neighbourhood, 8 died too young to be vaccinated; therefore, the remaining number, concerning which the desired information has been obtained, is 121.

Of this number, 72 have been vaccinated at the following ages, viz.:—At and under 3 months, 14 of the middling class and 9 of the labouring class; at 4 mo., 4 m. c., 6 l. c.; at 5 mo., 5 m. c., 2 l. c.; at 6 mo., 1 m. c., 6 l. c.; at 7 mo., 2 m. c., 2 l. c.; at 8 mo., 0 m. c., 3 l. c.; at 9 mo., 1 m. c., 3 l. c.; at 10 mo., 1 m. c., 3 l. c.; at 11 mo., 2 m. c., 0 l. c.; at 12 mo., 1 m. c., 0 l. c.; at 13 mo., 1 m. c., 2 l. c.; at 14 mo., 0 m. c., 1 l. c.; at 16 mo., 0 m. c., 2 l. c.; age unknown, 1.

Forty-three had not been vaccinated, but the mothers were quite willing to have the operation performed; of these there were—At the age of 6 mo., 1 m. c., 5 l. c.; 7 mo., 1 m. c., 1 l. c.; 8 mo., 1 m. c., 2 l. c.; 9 mo., 9 m. c., 3 l. c.; 10 mo., 0 m. c., 3 l. c.; 11 mo., 1 m. c., 3 l. c.; 12 mo., 0 m. c., 1 l. c.; 13 mo., 0 m. c., 3 l. c.; 14 mo., 2 m. c., 2 l. c.; 15 mo., 2 m. c., 3 l. c.; 16 mo., 0 m. c., 8 l. c.; 17 mo., 0 m. c., 2 l. c.; 20 mo., 0 m. c., 1 l. c.

In four cases the parents were decidedly opposed to vaccination. These children were of the respective ages of 6, 10, and 16 months. One belonged to the middling class of society, and three to the labouring class. In two instances the parents were undecided.

This, be it remembered, occurred in a district in which persons may at any time have their children vaccinated, by taking them a mile or a mile and a half, and have their choice of three public institutions, besides many medical men who profess to vaccinate gratuitously. It did not appear, moreover, that the neglect of vaccination arose from any prejudice against the public institutions or the medical men.

Thus, I think, I have shown, that in London, and, probably, in all large towns, the reason why children are not vaccinated is, because their parents will not lose an hour from their occupation, and carry their children a mile or a mile and a half to have the operation performed. If this be the case, the appointing stations for vaccination will do little towards extending the practice; but if medical men are paid sufficiently to induce them to look out among the poor, and vaccinate all whose parents will permit it, it is probable that 19 out of 20 of the population will be vaccinated.

With respect to the mode of doing this, I do not think the provisions in either of the bills now before Parliament will be sufficient. The plan of allowing poor persons to have orders upon any medical man whom they may prefer is good as far as it goes. It will give the poor opportunities of choosing their own vaccinators, and it will be an inducement to medical men to persuade the women they attend to employ them in this case as in others; but what will become of the children whose mothers are attended by midwives, and who, probably, form a large proportion of the unvaccinated? I think the best way to provide against this deficiency would be, *in addition to granting orders*, as above, to appoint a vaccinator in each parish or district, who should have access to the Register of Births, and who should keep a register himself. All the particulars in the Register of Births, which would be of value, might be copied into the vaccinator's register, in which there should be blank columns to keep an account of the children vaccinated, &c. It should likewise be the vaccinator's duty to vaccinate all children who had not been already vaccinated, and who had arrived at the age of six or nine months. I think that by this time medical men would only have themselves to blame if they allowed their patients to fall into the vaccinator's hands, and upon this plan nearly the whole population would be vaccinated.

The vaccinators should be paid only for those they vaccinated; but the sum should be sufficient to remunerate them for the trouble of keeping the register, &c.

As it might be objected to the foregoing calculation, that the children being very young, it does not show what number of these may yet be vaccinated, I have, through the kindness of Mr. Marson, extracted from the Register at the Small-Pox Hospital, the ages of all the children vaccinated there, between Jan. 1 and June 30, 1830. The proportion of children, however, vaccinated at that hospital at different ages, differs so materially from the corresponding numbers in the district to which my inquiries refer, that it does not appear possible to make an exact calculation in this manner. I, however, subjoin the extract, in order that others may have an opportunity of judging of its value.

Vaccinated at the Small-Pox Hospital, during the first half of the year 1839—at the age of three months and under, 274; 4 mo., 264; 5 mo., 161; 6 mo., 139; 7 mo., 109; 8 mo., 81; 9 mo., 48; 10 mo., 32; 11 mo., 9; 12 mo. 30; 1½ yr., 49; 2 yrs., 34; 5 yrs., 59; above 5 yrs., 56.

It will be seen by this table, that 838 children were vaccinated under the age of six months, and 507 above that age. In Camden Town, 47 children had been vaccinated under the age of six months, and if the remainder were vaccinated in the same proportion as at the Small-Pox Hospital, the number that should be afterwards vaccinated would be 28½, instead of the 25 operated upon at the time of making my inquiries.

ON A PARTICULAR FORM OF UTERINE HÆMORRHAGE.

To the Editor of THE LANCET.

SIR:—The following remarks, on a particular form of uterine hæmorrhage, are at the service of your valuable Journal. I am, Sir, your obedient servant,

CHARLES EDWARDS, A.B., T.C.D., M.R.C.S.L., &c.

Cheltenham, May 26, 1840.

Passing by those hæmorrhages, the diagnosis and treatment of which are well understood, I would invite the attention of the profession to the consideration of some points in the diagnosis of a peculiar form of hæmorrhage, occurring after the expulsion of the placenta, and depending not so much on non-contraction of the uterus, as on the *state of its nervous and vascular systems.*

The existence of this hæmorrhage has been already noticed by Professor Burns, who, when treating of the preventives of hæmorrhages, states—"But to these causes we must also add the condition of the uterine vessels themselves, which, immediately after delivery, have, if their state be natural, their circulation much affected by the alteration in the action of the nerves of the uterus itself."—*Edn.* 1837, pp. 402.

Again: "But whilst we assign the due value to this (uterine) contraction, and hold its absence as a cause of hæmorrhage, still we must attribute somewhat to the state of the vessels themselves as affected by the nerves of the uterus. If any circumstance shall keep up the excitement of the nerves of the uterus, the whole vascular system is also kept active."—pp. 542, *Op. Cit.* And, again, speaking of the universality of spasmodic contraction of the fibres of the cervix uteri as a concomitant, if not a cause, of the relaxation of the rest of the uterus, he states, "Even independent of the state of muscular contraction, hæmorrhage may take place from that of the vessels."—Pp. 543, *Op. Cit.*

The published work of so eminent an obstetrician, must long since have commanded attention to the existence of this "*nervous hæmorrhage*," as it may be properly designated; but the object of this paper is the consideration of a peculiar character of the pulse invariably preceding it.

It is truly surprising how little attention has been paid to the state of the pulse in labour with hæmorrhage, although authors have laboured to assign a characteristic pulse to almost every other affection.

Of the approach of these nervous hæmorrhages, I have uniformly derived sufficient warning from the occurrence of a peculiar pulse, considerably before that period of labour at which the os uteri is fully dilated, or nearly so. It is the *hæmorrhagic* pulse, in other cases well known to practitioners, but in this hitherto unnoticed.

This characteristic pulse I have seen accompanied with delirium, lasting an hour, or perhaps more, and as totally different from that delirium which frequently accompanies the last stage of labour, as the hæmorrhagic differs from the accelerated pulse of advanced labour. The delirium alluded to always *ceases at this period*, and before the final expulsive pains, during which the ordinary delirium of labour occurs; and now with respect to the treatment.

In this form of hæmorrhage, depending upon excitement of the nervous and vascular systems, I have found opium and the application of cold, the principal remedies; but the exhibition of the secale cornutum, though of much service in hæmorrhages from mere non-contraction, and only inferior to the introduction of the hand in such cases—in the nervous hæmorrhage is worse than useless. The uterus is felt *semi-contracted* in the latter, and will not contract further on the hand, the introduction of which seems to be of more service in removing coagula, and thus facilitating contraction (perhaps in the same way as the evacuation of the liquor amnii sometimes does), than in directly producing it.

In this way would I explain the experience of Professor Burns in those cases, wherein he states (without accounting for it) that "the manual abstraction of coagula is often of more advantage than retaining the hand longer in the uterus."—Pp. 548, *Op. Cit.*

This semi-contraction of the uterus differs widely from the hour-glass contraction, believed by Professor Burns to co-exist so generally with hæmorrhages, but in which opinion I cannot fully concur. He states, "this has been called, though not very aptly, the hour-glass uterus; and if I did not know the hazard of establishing a general rule, I would say that in almost every instance this contraction takes place; I have rarely introduced the hand into the uterus, in a case of flooding, without meeting with it, whether the placenta had or had not been expelled."—Pp. 543, *Op. Cit.*

But it may be argued, this general semi-contraction differs from the hour-glass contraction only in *degree*. How, then, is the non-adaptation of the hand in the former, reconcileable with the so necessary indication of its introduction in the latter? The reply is easy. The latter is accompanied with *relaxation of the superior fundus;* you pass your hand, not so much merely to effect the dilatation of the stricture, as through the necessity of passing through the stricture so as to bring the hand into contact with the flaccid fundus, and thus to stimulate to uniform and perfect contraction after the placenta, if retained.

The nervous hæmorrhage, therefore, which I have pointed out, differs from that with hour-glass contraction, and is diametrically opposite to that from mere non-contraction; this latter being attended by general relaxation and demanding *stimulant* treatment; e.g. the hand, ergot, &c. &c., the nervous being preceded in an early part of labour by the hæmorrhagic pulse, accompanied by general semi-contraction, and most benefited by *sedative* treatment; e.g. opium and cold.

MOXA, IN CHRONIC RHEUMATISM.

To the Editor of THE LANCET.

SIR:—I beg to notice, through the medium of your valuable Journal, when you have space, a case of chronic rheumatism and one of lumbago, in which moxa has proved useful, for the purpose of bringing this remedy to the notice of those who have not yet applied it. I remain, Sir, your obedient servant,

P. CHILCOTE, Surgeon.

12, Golden-square, June, 1840.

CASE 1.—A lady of delicate constitution had repeated attacks of rheumatism for several years; when she consulted me she complained of severe rheumatic pains which affected the knee. I made trial of a long course of the remedies in general use without any beneficial effect, until I applied the moxa used in the manner laid down by the late Mr. Boyle. After three or four applications the patient experienced great relief; in the space of a few weeks she was entirely cured.

CASE 2.—A gentleman, when I first saw him, had suffered for a long time from lumbago, and pains of the knee-joint, accompanied with remarkable weakness of the whole limb. I applied the moxa in this case to the parts affected with equal success, besides several other occasions on which I have made trial of it. The mode of applying it, is to hold the ignited moxa over the part to which it is to be applied, but within an inch and a half from the skin, keeping up the action of the moxa by means of the syringe; one, two, or three moxas may be applied at a time, according to the severity of the case. The effect produced, by its application upon this plan, is altogether different from that which results from the mode adopted for its use in the East, and by surgeons on the Continent, who employ it as a powerful counter-irritant; but when applied in the manner before noticed, by holding the moxa at a regulated distance from the skin, so as not to cause any abrasion of the cuticle, it acts as a stimulant, and possesses considerable power over the absorbents by exciting them to action. I have at present a case of stiff knee-joint under treatment, for which, not receiving the least benefit from mercurial friction, iodide of potassium, &c. &c., I was induced to try moxa, which has been applied for three weeks, and there is now considerable reduction in the size of the part affected, and slight motion in the joint. I have reason to think it will cure in this case; nevertheless, it has as yet proved more active than other means which had ample trial. My attention was first directed to this remedy by some cases of stiff joints, chronic rheumatism, lumbago, and sciatica, which were treated successfully with it by the late Mr. Boyle and Mr. Earle, of Bartholomew's Hospital; and I think that advantage would result if moxa were more generally used.

DUMBNESS PRODUCED BY QUININE.

To the Editor of THE LANCET.

SIR:—Having observed, in the recently published numbers of THE LANCET, no fewer than three cases of "dumbness" attributed to the employment of sulphate of quinine, I should feel obliged by your permitting me to make your valuable Journal the medium of a few remarks in reference to them.

The report of an isolated case of so rare a nature as that in question, induced by a remedy that has received an almost universal sanction and adoption, can be regarded in no other light than either as an anomaly, or as the result of a confusion of coincidence with cause and effect. It was in this latter point of view, that I was inclined to consider the first case that met my notice, and those of a subsequent date appear calculated to add only very equivocal, if any, weight to the former. My reasons for doubting that the "dumbness" mentioned in the cases referred to, can be ascribed to the sulphate of quinine, are chiefly the following; viz.

The very vague and unsatisfactory manner in which the cases are reported;—the omission of all notice of the *nature* (whether paralytic or otherwise) of the dumbness,—the absence of any theory to explain this "singular effect" of quinine;—the possibility of the dumbness being referrible to other more competent causes, as hinted in the remarks on the case published by Dr. Ménage:—and lastly, general experience being contrary to the production of such an effect by quinine, and this, in relation to the cases under consideration, cannot be regarded as merely negative evidence.

Trusting that the very general employment of the valuable remedy in question, may be deemed sufficient apology for the notice here bestowed on cases, which might have the effect of restricting its use. I am, Sir, your obedient servant,

June 8, 1840. S. Y. G.

A Practical Work on the Diseases of the Eye, and their Treatment, Medically, Topically, and by Operation. By FREDERICK TYRRELL, Senior Surgeon to the London Ophthalmic Hospital, &c. 2 vols. 8vo. London: John Churchill.

In an address to his pupils, Mr. Tyrrell states that the present work has been published, partly in compliance with their wish, and partly from a conviction that he owes to the profession the duty of presenting to them the results of his experience in the London Ophthalmic Hospital, for the long period of two-and-twenty years. In fulfilling his intention, he follows the example set by his predecessors and coadjutors, and it shall now be our business to ascertain what Mr. Tyrrell himself has done for ophthalmic surgery, taking the opportunity of laying before our readers an account of any improvements that we may discover he has made and here recorded.

On a superficial glance at the work, we are surprised at the almost entire absence, not merely of references to, but even of the names of the individuals, whether living or dead, who have contributed to the advancement of this department of knowledge. The student, indeed, who peruses Mr. Tyrrell's volumes, would be led to suppose that, excepting within the walls of the "London Institution," scarcely a single improvement has been introduced, in this country, into ophthalmic practice. But, even here, Mr. Tyrrell stops short at the names of Saunders and Farre. Of his immediate predecessors, he evidently thinks very little; not a single allusion is made to Messrs. Travers and Lawrence throughout the work, though both of them have written copiously on the same subject. In fact, all that he has to say with respect to his fellow-labourers in general is, that "he has obtained much useful and valuable information from the experience and labours of others, for which he begs leave to offer his kind acknowledgments to most of the modern authors on ophthalmic medicine and surgery."

Mr. Tyrrell has eulogised the talents of Messrs. Saunders and Farre. The latter gentleman passes in the profession as an ophthalmologist of a high order, and Mr. Saunders as a man of good ability; but we know of little that can be said in his praise, beyond what may be pronounced of many who have succeeded him. The improvements which he introduced into practice are neither numerous nor important; it has been tolerably well established, that the operation which he is thought to have introduced,—that of breaking up the opaque lens in infants,—was practised, at least as early, by the late Mr. Gibson, of Manchester. A great deal was being effected at that time by other men, both at home and abroad, especially in Germany. Indeed, the era which now possesses so many valuable labourers was just then commencing, and to the combined exertions of many, and not to those of one or two individuals, we must refer the great improvements of the present day.

Mr. Tyrrell's work commences with some remarks on diagnosis, on the examination of the eye, and on the general treatment of ophthalmic disease.

Respecting the means to be employed for removing ophthalmia, when attended with increased vascular action, the author considers "the general abstraction of blood to be unnecessary and improper, unless the pulse evinces a degree of resistance or incompressibility, besides an unusual degree of fulness, or quickness; except when there is cerebral mischief or disease, when the pulse is usually slow and laboured." He further conceives it to be "a great mistake to suppose that it is necessary to take away large quantities of blood, or to bleed to such an extent as to occasion faintness, in order to check severe local disease; more harm than good results from such practice." He considers that the action of mercury is more certain when the patient is allowed a generous diet, and he lays down a general rule, that whenever it is necessary to give that remedy for a few weeks, it is essential to support the strength; or, as he formally states it, "to promote and maintain power at the same time."

The remarks on local remedies are scarcely worthy of notice. Although he thinks favourably of counter-irritation, in combating ophthalmic inflammation, he prefers the liniment of ammonia, mustard plaster, and tartar emetic ointment; blisters, setons, and issues, particularly the two last, he has long since abandoned in affections of the conjunctiva and cornea. In cerebral affections, with a tendency to amaurosis, they are sometimes serviceable. Patients affected

with acute ophthalmia should not be confined to bed, or even to the horizontal position. From these observations no intelligent practitioner will dissent.

Mr. Tyrrell next points out the affections of the individual textures of the eye, with a brief prefatory description of the anatomy of each tissue, commencing with the conjunctiva. These are considered under the usual divisions of Simple, Pustular, Catarrhal, Purulent, Chronic, Strumous, and Exanthematous Ophthalmia.

Attention is judiciously drawn to the various constitutional causes which may excite simple conjunctival inflammation, such as disorder of the stomach, the liver, the intestines, the skin, the uterus, &c., illustrated by appropriate cases. The impropriety of using depleting measures for too long a period, and the rapid improvement which results from opposite treatment, such as improved diet, tonics, and local stimulants, are urgently enforced. Perhaps, in some instances, too much efficacy is attributed to general remedies, and too little to remedies of a local character.

In several cases of protracted, intermittent, and irritable ophthalmia, Mr. Tyrrell found the best results to follow the internal administration of tonics, particularly the sulphates of iron, zinc, and copper, in very small doses; and, also, from iodine and hydriodate of potass, combined with sarsaparilla, or some mild bitter, and the preparations of bark, quinine, &c.; but, more than all,—and frequently after the failure of all these,—change of climate, particularly migration to a dry and warm atmosphere, such as that of the South of France, or that of Germany, and the East.

In treating of catarrhal ophthalmia, the author demonstrates the impropriety of constantly using cold lotions to the eye, which he thinks frequently excite inflammation of the sclerotic coat. He does not approve of the employment of strong, stimulating applications in the catarrhal form of ophthalmia, the disease being so very tractable as to render these unnecessary.

The section on Purulent Ophthalmia is one of interest. The topic appears to be a favourite with Mr. Tyrrell, having recently formed the subject of an Essay from him in the "Medico-Chirurgical Transactions." He thinks that when the cornea suffers during the progress of this disease, it is not so much from inflammatory action extending into its texture as from mechanical pressure, as the following quotation will show:—

"The mode in which the cornea is destroyed is as follows:—The principal supply of blood to this texture is through the vessels of its conjunctival covering, as may be distinctly seen in some morbid conditions of these structures (as in corneitis and vascular cornea, from granulated lid or strumous ophthalmia), for the larger vessels ramify in the conjunctival layer, and send minute branches to the texture of the cornea. The occurrence of chemosis, or elevation of the conjunctiva covering the sclerotic, around the margin of the cornea, by rapid deposition in the sub-conjunctival membrane, first impedes, and then, altogether, interrupts the circulation in the corneal portion of the membrane; and this arises from the pressure, at the margin of the cornea, by the deposition, and from the tension and displacement of the membrane; for the attachment of the conjunctiva, over the junction of the cornea and sclerotic, is so firm, that it undergoes little or no change, whilst rapid and extensive alteration takes place in the membrane around; but its organisation is so delicate, that the circulation is easily interrupted, by the combined effects of pressure and tension.

"The cornea does not mortify from an extension of inflammatory action to it, but solely from an interruption to its supply of nutritious fluid. Mortification of the cornea commences in various parts of the structure; most frequently near the margin, sometimes near the centre, or between the centre and circumference; in the first position, if the disease be arrested, the slough is usually of a crescentic figure, following the margin of the cornea; in the other positions, under similar circumstances, the slough is generally round or oval.

"Just previous to the occurrence of mortification, the whole of the cornea generally appears hazy or cloudy; but this haze or cloud is most dense at the part at which mortification subsequently takes place. During the state of gangrene, the conjunctiva remains moist and shining; but as soon as a part has lost its vitality, the conjunctiva which covers the mortified part loses its brilliancy, and becomes dull; and, as soon as the mortification stops, or is arrested, a well-defined line bounds the mortified part, and the other portion of the cornea quickly regains much of its healthy character and transparency. The partial mortification of the cornea usually extends over one-half of the entire texture, and frequently more; but, occasionally, not more than a fourth part of this important structure is destroyed; the mortification, also, generally extends through all the laminæ, so that, when the mortified part sloughs off, the anterior cham-

ber is opened, and the iris, in part, prolapses. We never, however, find, in these cases, that the destruction of the deep laminæ is so great as of the superficial; and, perhaps, this depends upon the inner laminæ receiving some supply of blood from the vessels of the membrane of the aqueous humour. It rarely happens, that the cornea suffers by mere ulceration (as in simple ophthalmia), from the acute purulent disease. We do, now and then, find small depressions, resulting from loss of substance, after the acute stage has passed by; and these may be, sometimes, the result of pure ulceration; but I believe them most frequently to be occasioned by the separation of a small slough or mortified part, which often takes place with great rapidity."

The opinion, that sloughing of the cornea is the result of pressure and tension; or, in other words, of strangulation, whether right or wrong, is by no means original, although, from Mr. Tyrrell's account, the reader would suppose as much. Mr. Travers distinctly states that gangrene of the cornea and its conjunctival covering may be brought about, among other causes, "by the strangulation of the vessels of both textures, as in the excessive chemosis, which destroys on the same principle as the paraphymosis, or the strangulated hernia." Similar opinions have since been expressed by Messrs. Mackenzie and Middlemore.

Other writers maintain that the inflammatory action spreads from the conjunctiva of the sclerotica to that of the cornea, and thence to the lamellated portion of that texture. Disease of the cornea is so frequently only an extension of morbid action of the conjunctiva, that it is at least likely that the sloughy condition of that portion of the organ may be owing to a continuation of the same violent action which is so strikingly exhibited in the conjunctiva itself, and in the palpebræ. It is a matter, however, which we see no way of deciding, and which must be left to the judgment of the reader.

Mr. Tyrrell states, in the extract which we have given, that mortification of the cornea commences most frequently near its margin, and that in that situation the slough is usually of a crescentic figure. We have ourselves always found that sloughing is most frequently noticed at about the central portion of the cornea; whilst the crescentic excavation, to which Mr. Tyrrell alludes, we think is the result of simple ulceration, or, at all events, of sloughing ulcer. The proper slough of the cornea generally presents a whitish, or greyish, appearance, described by some as resembling portions of wet paper; whereas, the crescentic ulcer always looks clean, broad at its outer surface, narrow as it extends beneath, and not differing materially from the ordinary penetrating ulcer, excepting in figure.

In the management of purulent ophthalmia, Mr. Tyrrell advocates general bleeding, and the administration of mercury and tartar emetic, in plethoric persons and at the commencement of the affection; yet he is satisfied that the excessive depletion which was formerly practised often tended to hasten the unfavourable termination of the disease. A case is given in which the most active depletory treatment was adopted, the result being that "the whole of each cornea sloughed off, and irrecoverable blindness ensued." Mr. Tyrrell has likewise employed powerful astringent or stimulating remedies, but considers them to be more prejudicial than beneficial. The substances of this class which he has used, he states to have been a strong solution of nitrate of silver, and the undiluted solution of the diacetate of lead.

The treatment which he especially advocates, founded on the belief that the danger to the eye is occasioned by the excessive pressure of the œdematous conjunctiva, is "a free division of the chemosed part, so as to relieve the tension of the conjunctiva, and to allow of the escape of fluid from the subjacent cellular tissue." He states that incision and excision of parts of the conjunctiva had been previously suggested, and effected, in the condition of chemosis; that this treatment was not very successful; and that the want of success was owing to the improper application of a correct principle.

"For the incisions in the membrane, and excisions of portions of it, had been generally made in a direction corresponding to the margin of the cornea, and frequently extended completely around, but at a very short distance from it; thus the vessels passing to the corneal portion of the conjunctiva, must have been in great part, if not *in toto*, divided, and the supply of the corneal portion and cornea cut off, or nearly so; the operation tended, therefore, rather to augment, than diminish the mischief it was meant to obviate: this error arose from ignorance of, or inattention to the anatomy of the organisation of the part.

"In the plan I proposed, the incisions were to be made, through the sclerotic portion of the conjunctiva and its subjacent cellular tissue, beginning at the margin of the cornea, and extending towards the edge of the orbit, in a direction as rays radiating from a centre, but avoiding immediately the transverse and perpendicular diameters of the globe, that the larger vessels, passing to the cornea, might not be injured."

The question, then, between Mr. Tyrrell's plan of scarifying the conjunctiva and that previously adopted, is simply one of direction, viz., whether the incisions are to be radiating or circular. Now, if strangulation be really the condition to be relieved, and the strangulation be caused by pressure at the margin of the cornea, we must conclude that the nearer the incisions be made to the strangulated part, the greater the benefit that may be expected to result. Either operation can only act beneficially "by relieving the tension of the conjunctiva, and allowing of the escape of fluid from the subjacent cellular tissue." These effects are quite as likely to be produced by incising or excising portions of the most distended part of the conjunctiva, viz., that part which immediately surrounds and overlaps the cornea, where the fatal pressure, according to this view, is produced, as at a point more remote. Nor need any apprehension be entertained that circular incisions, or even excisions, around the margin of the cornea can operate, as Mr. Tyrrell wishes us to believe, mischievously, by entirely cutting off the vascular supply which is in such excess. Our experience leads us to say that there is no risk of this description, but rather that the difficulty consists in removing a sufficient portion to be of any service. An operation of this kind on an eye suffering from an attack of acute purulent ophthalmia,—the eyelids being frequently so tense as scarcely to allow of their separation, is not easily performed, and to excise a considerable portion of the conjunctiva is very difficult, at least in the early stage, when alone such an operation can be serviceable. Nevertheless, when it can be done, (and the proceeding is not more difficult than that of incising in a radiated direction,) so as to remove the portion immediately overlapping the margin of the cornea, it is best calculated to relieve the tension of the chemosed conjunctiva. Notwithstanding Mr. Tyrrell's statement to the contrary, the operation of excision is reported by many surgeons of great experience to have succeeded in relieving the congested state of the membrane, and to have been useful in preventing gangrene of the cornea.

Mr. Tyrrell details several cases in which he employed the treatment by radiating incisions; but in every one it was in combination with other means, a circumstance which renders it difficult to say how much of the benefit was really owing to the scarification. Thus, in his first case, a young man, of robust make, and good constitutional power, after incising the conjunctiva, 18 ounces of blood were removed, a dozen leeches were applied, and calomel, opium, and other medicines were administered. This patient recovered, leaving an opaque cornea, but not to such an extent as to prevent vision. In other cases, which were in a more advanced stage, from 12 to 18 leeches were applied, after scarification, with the other remedies before mentioned. For some of these patients, Mr. Tyrrell judiciously ordered porter, animal food, quinine, mineral acids, and other tonics. In the last case, which appears to have been one of a mild character, both corneæ being perfectly clear when the patient was first seen, ulceration occurred after the process of incising, and to such an extent as to permit the escape of the aqueous humour, and induce prolapsus of the iris. The eyes, however, ultimately got well with the aid of tonics and good nutriment.

In the purulent conjunctivitis of infants, Mr. Tyrrell finds that the application of a leech or two to the palpebræ is generally sufficient to remove their swelling and tension, so as to enable the surgeon to obtain a view of the cornea, when that cannot otherwise be accomplished. He has never yet tried incision of the chemosed conjunctiva, not having met with a suitable case. When there is sloughing of the cornea, he recommends Battley's solution of the yellow bark, in doses of one or two drops, with a little syrup. What advantage this preparation possesses over the quinine we are not informed. Perhaps we are to understand that it is more palatable.

In treating of the chronic disease, attended with granulations and vascular cornea, that succeeds purulent and catarrhal ophthalmia, Mr. Tyrrell has found, in common with some other writers, that the more violent the treatment, and the more feeble

the constitution of the patient, the more severe and protracted are the symptoms which result. He recommends, as in chronic ophthalmia generally, the administration of tonics, good living, change of air, and the local use of either the undiluted solution of the diacetate of lead, or the sulphate of copper, in substance.

The remarks on strumous ophthalmia are, on the whole, correct and sensible, particularly with respect to the general treatment. Local remedies of all kinds Mr. Tyrrell considers to be objectionable. He contends that more harm than good results from the use of counter-irritants, as tartar emetic ointment, issues, setons, &c. To astringent and stimulating applications to the organs themselves he entertains great repugnance, arising, as he says, from having observed the frequent and serious mischief they produce,—meaning the common astringent and stimulating lotions, ointments, or drops. The nature of the mischief observed, we are left to conjecture.

The observations on Corneitis contain nothing that is very striking. Mr. Tyrrell speaks highly of the effects of small doses of mercury in this affection. In other respects, he prescribes the same treatment as in ordinary ophthalmia, and places his chief reliance on remedies which act on the system at large, particularly tonics.

Respecting the remaining affections of the cornea we discover nothing that demands remark, excepting the absence of any notice of the morbid condition termed *Pannus*. With regard to conical cornea, however, Mr. Tyrrell advocates a mode of treatment which he appears to consider as previously unknown. He says:—

"Within the last six years I have succeeded in relieving such cases, to a considerable extent, by a plan so simple that I am surprised it had not been previously tried. It consists in altering the position of the pupil, and removing it from beneath the centre of the cornea, or that part which has its figure most changed, to near the margin, when (where?) the least change has occurred; the error in refraction is consequently much lessened, and the vision becomes more perfect, and the focus lengthened. I effect the change in the position of the pupil in the following manner. I make a puncture, with a broad needle, close to the junction of the cornea and sclerotic; but through the former, and at the part corresponding to the interval between the abductor and depressor muscles, I then introduce a small blunt hook, by the aperture in the cornea, and catch the pupillary margin of the iris; and the margin thus caught, I carefully draw out of the aperture by the hook; and, subsequently, as much of the membrane as is requisite to cause the pupillary opening of the iris, to change its position, from the centre to the outer and lower part of the cornea. The portion of the iris, brought out out by the hook, I then cut off by (with?) a fine pair of scissors, &c."

The novelty of this proceeding will vanish from Mr. Tyrrell's view, when he peruses the following extract from the treatise of Mr. Middlemore:—

"Where the point of the conical cornea has become opaque, and vision is thereby rendered much more obscure than it would otherwise be, it has been proposed to make an artificial pupil near to the margin of the cornea, which it is said will have two important advantages; namely, removing the pupil from the opaque part of the cornea, and allowing the light to be transmitted through the least convex part of that membrane."

This operation really is not so useful as some persons may be led to expect. Indeed, Mr. Tyrrell states that he has performed it seven or eight times, of which in two only was the benefit very considerable.

Inflammation of the sclerotic is passed over very briefly. The affections of the membrane of the aqueous humour are detailed at some length. The subject of Iritis is treated clearly, and with judgment. Mr. Tyrrell points out the impropriety of trusting to simple antiphlogistic means, such as bleeding, &c., although sometimes useful in the first stage. He agrees with most modern writers that mercury is the best and safest remedy for internal exhibition, and that belladonna should be freely applied locally.

He next considers the compound inflammatory affections, more particularly of the external tunics, such as Conjunctivo-sclerotitis and Sclero-iritis. In these portions of the work he treats more fully of the management of sclerotitis. His principal reliance, after unloading the bowels, and, perhaps, applying a few leeches, or a blister, is placed on the administration of internal tonics, such as the powder of bark, with carbonate of soda, in doses of five grains of each; a combination which he thinks possesses peculiar virtues, and which he states was first suggested to him by Mr. Wardrop,—the only occasion in which mention is

made of that writer. Other remedies are often useful, particularly the quinine with sulphuric acid. Sometimes colchicum and turpentine are also useful, but these are not to be depended on. Mercury, although serviceable in iritis, Mr. Tyrrell thinks of no value in combating sclerotitis. In cases of a mild character, or after the acute stage has passed, a slight local stimulant, such as a drop of the vinum opii, or of the solution of nitrate of silver, does good.

At the end of the first volume, very much out of place, after the subjects already enumerated, Mr. Tyrrell has introduced his account of the diseases of the eyelids and lacrymal appendages. This he preferred to dividing the subject of Amaurosis, the consideration of which opens the second volume, and forms thereof a considerable portion. As we need not return to the first volume, we may here summarily observe, that the subjects connected with the last portion of that volume are discussed with discretion. One or two very successful cases of the treatment of ectropium, in which the application of plastic surgery was of great benefit, are detailed, and reflect credit on Mr. Tyrrell's operative proceedings. But the author has omitted all mention of Ptosis, and the operation that is sometimes required for its treatment.

The second volume is commenced with an account of the affections of the deeper-seated textures of the eye, viz., the choroid and the retina.

A review of the author's account of the diseases described under the head of Choroidal Affections, is calculated to create an impression that he has indulged much in speculation, assuming many affections to be located in the choroid membrane, which have hitherto been regarded by the best writers as belonging to the retina. For instance, he describes *muscæ volitantes* under the title of "Partial temporary distension of the vessels of the choroid;" the *fixed muscæ*, under that of "Varicosity of some of the vessels of the choroid;" and, under the head of "Temporary congestion of the choroid," he describes the affection commonly termed impaired vision or *weakness of sight*. He attributes all these various affections to some irregular action of the choroidal vessels, which, by their proximity to the retina, press upon, and thus impede the function of the nervous membrane.

It is very easy to refer to these conditions of the choroid, the phenomena which are classed under the heads we have mentioned, such as the dark spots, the lines, the net-work, and the other appearances which are frequently presented to the patient's view; but how is the doctrine to be proved? Mr. Tyrrell no where produces satisfactory evidence on this point.

Similar remarks may be applied to Mr. Tyrrell's account of inflammation of the choroid, which is the same as the affection usually described as Amblyopia, or Incipient or Imperfect Amaurosis. That choroiditis frequently *accompanies* this condition, we cannot doubt; that it is its *cause* is altogether an assumption. Mixed up with the consideration of this affection, Mr. Tyrrell has described what would have been more correctly termed Inflammation of the Internal Tunics generally, that condition in which the retina becomes disorganised, the sclerotica thinned from absorption, so as to allow the choroid to become visible, or even to project, there is thickening and irregularity of the surface of the iris, together with opaque deposition on the capsule of the lens, fluidity of the vitreous body, and general softening of the globe. We have probably seen this form of disease quite as frequently commence in the sclerotic and iris; but that it may also originate in the choroid is quite likely, although nothing certain on this point can be stated.

The situation of the choroid, removed from the observation of the surgeon, renders it merely a matter of conjecture as to when it is affected or otherwise. The signs which denote the existence of choroiditis are, therefore, obscure and uncertain. It is most probable, as in the case of sclerotitis, that it rarely exists without a similar condition of the contiguous tunics, more particularly the ciliary body, the capsule of the lens, the iris, and the retina.

Although Mr. Tyrrell speaks with the utmost confidence of the existence of idiopathic choroiditis, yet he has supplied no conclusive evidence in support of his opinions. He has only had an opportunity of making one post-mortem examination, which could elicit anything on the subject. In this case, in one eye, there was proof of severe and long-continued inflammation of all the internal tunics, the choroid, the retina, the iris, the crystalline, and its capsule,

and the vitreous humour; and in the other eye similar mischief had resulted, but to a less extent, affecting, however, the choroid, the retina, the iris, and the capsule of the lens. We do not see how this case assists Mr. Tyrrell, because, so far from the disease being confined to the choroid, it had extended to the retina and other textures; an amount of disease which satisfactorily accounts for the phenomena of muscæ, and the imperfection of sight that the patient experienced. The extreme vascularity of the choroid forms the strongest argument in favour of its being the principal seat of inflammatory action in these cases; but then we know that the circulation of the retina is independent of that of the choroid, and although placed in contact there is little or no communication between the two membranes.

Mr. Tyrrell relates several interesting cases of fungus hæmatodes. The two first occurred in children; the disease appeared to be suspended for a time by careful treatment, and the eyes became atrophied, and hopes were entertained that the morbid action had disappeared, but, after a time, the fungoid growth was again developed, and death ensued. The two last cases occurred in married females, at about the middle period of life; in each patient the disease was arrested, but we have doubts as to these having been genuine cases of fungoid disease.

Ophthalmitis is disposed of very briefly, scarcely occupying more than a page. Mr. Tyrrell regards it as an aggravated and extended form of what he terms Acute Glaucoma. Diseases of the orbit are next considered, and, then, diseases of cerebral origin producing amaurosis and other affections, which imply irregular or deficient nervous power, such as strabismus, paralysis of the motor and sentient nerves, &c. Mr. Tyrrell does not recommend surgical interference in cases of confirmed strabismus, as the operation of dividing the adductor muscle, he thinks, can only afford a little improvement in the general appearance, for the motions of the eyes would not correspond.

The sections on the different varieties of amaurosis contain much valuable matter. The directions for their management are very judicious. Mr. Tyrrell forcibly points out the danger of employing excessive depletion. Bleeding is only to be recommended at first, and when there is decided plethora. In the treatment of amaurosis, he has found scarcely any benefit to result from the use of strychnine, veratria, and similar remedies. His dependance is chiefly upon such means as have a tendency to equalise the balance of power. Usually, he thinks amaurotic affections, and, indeed, the deep-seated affections of the eye generally, are accompanied by a deficiency of power, or, in less sounding phrase, debility; and that to increase power, to raise it from below par, as Mr. Tyrrell is fond of designating it, to a proper balance, is the chief object. This is to be effected by various means, such as simple and nutritious diet, moderate exercise, perfect quiet of body and mind, strict attention to the most important secretions, mild tonics, such as sarsaparilla, cascarilla with ammonia, and sometimes wine, and even weak brandy and water, at dinner. Small doses of mercury, so as not to risk the production of salivation, and small blisters above the eyebrow, are also to be employed. Care must be taken properly to discriminate such cases as obviously arise from increased vascular action, whether in the eye or in the cerebral portion of the visual apparatus, when, of course, antiphlogistic treatment is called for.

The nature and treatment of cataract is ably pointed out. Mr. Tyrrell relates one or two cases of partial cataract, in which, when the pupils were contracted, very little vision existed; but, by the constant use of belladonna, sufficient sight was procured to render an operation unnecessary. In one case it had been thus used for a period of 18 years, apparently without producing any permanent affection of the iris, as proved by the fact that after 48 hours' cessation of its application, the pupil was of the natural size, and its motions were as perfect and as rapid as if that substance had never been used.

The observations on extraction of cataract are very judicious. Mr. Tyrrell points out the propriety of preparing the patient by suitable treatment for a certain time previous to the operation. Thus, in plethoric persons, it is necessary to lower action by abstemious living, by purgatives, or by abstraction of blood. It is better to bleed before than immediately after the operation, as the sickness and vomiting, it frequently

causes, are often productive of extreme mischief to the eye. In persons of weak constitution, particularly those much advanced in years, means of a contrary character may become necessary, to raise power, which is to be brought about by improving diet, and by the use of medicinal and other stimuli.

During the operation of extraction, Mr. Tyrrell thinks the patient should be in the recumbent posture. The surgeon should sit at the head of the patient, and himself take charge of the superior lid; a proceeding which gives him greater command over the eye, and renders him almost independent of the aid of an assistant, the latter being required merely to depress the inferior lid. Mr. Tyrrell entertains a decided aversion to making a flap of the cornea downwards; the best situation he conceives to be downwards and outwards, and next to that, directly upwards. We do not see that he gives very clear reasons for this preference. For the surgeon to command the superior lid in operating on the left eye, it is essential for him to be able to operate with the left hand—a matter Mr. Tyrrell thinks of some importance. The difficulty of this we think is not so great as is commonly imagined, at least to one who can use the right hand with ease and dexterity, and who has had some experience.

The following is a course of very doubtful propriety to advise, viz., that if the surgeon, when seated at the head of the patient, wish to make the lower or oblique section, he has only to cut from, instead of towards, himself. This, no doubt, might be properly effected by operators of great experience, but so awkward a movement it is not judicious to recommend for general adoption, since but few surgeons could execute it properly.

We question, likewise, the soundness of Mr. Tyrrell's advice when he recommends the withdrawal of the knife, after it has crossed the anterior chamber, because of the iris getting beneath the cutting edge of the instrument, and then introducing the curved knife to complete the section of the cornea. We consider this practice to be bad, and would rather pursue the operation with the original knife, at some risk of cutting the iris, as, from our experience, the danger to the eye is much greater from the use of a number of instruments than from any mischief which the iris may sustain by a slight incision.

The operation practised on both eyes at one sitting has its advantages, but Mr. Tyrrell thinks it better to operate on one only at a time. We would only perform the double operation by the desire of the patient; but, if Mr. Tyrrell regard the principle as wrong, no consideration ought to induce him to act contrary to his judgment.

Mr. Tyrrell states, that when the cataract is fluid, vomiting has in almost every case occurred after operation. This we regard as a mere coincidence, for we have frequently seen fluid cataracts broken up without any such effect.

Mention is made of an instrument for the extraction of a portion of opaque capsule. What kind of instrument this may be, the reader is left to conjecture. We should not allude to it but for the knowledge that an instrument for a similar purpose has lately been introduced by Mr. Middlemore. For aught we know to the contrary, this may be the same; but Mr. Tyrrell has a great aversion to use the names of other authors and practitioners.

If Mr. Tyrrell find it difficult to mention what has been done by his contemporaries, he has no such scruple about any little matter which may, as he considers, tend to his own exaltation. Accordingly, he makes the most of a modification of the operation of keratomyxis, which he claims to have introduced into practice, and which he denominates *drilling*. It is effected by passing a fine needle through the cornea, which is made to perforate the opaque capsule, and enter the substance of the lens to the extent of about 1-16th of an inch, the needle being then rotated between the finger and thumb, so as to make the point act as a drill. The object of this operation is to cause the gradual absorption of both lens and capsule, and for this purpose requires to be performed on an average of 7 or 8 times, the capsule being punctured in a fresh place each time, as Mr. Tyrrell is careful to direct.

Now practical men must perceive that any benefit which can result from this mode of operating, would be as effectually produced by slightly lacerating the capsule and breaking up the lens, in such a manner as to avoid displacing it, as by the fanciful method which Mr. Tyrrell recommends. The cases especially adapted for drilling,

he considers to be contracted pupil with opaque capsule, after iritis.

In the operation for artificial pupil, as in cases of conical cornea and in central opacities, Mr. Tyrrell advises the use of a broad needle, for the purpose of puncturing the cornea, and then the introduction through the aperture of a small blunt hook, with a long bend, which he is careful to tell us is of his own invention. ("*Tyrrell's hook.*") Having never witnessed the operation with a needle, we can only speak conjecturally on the subject; but it seems to us that a small puncture with a cataract-knife would be a better proceeding, as the aperture may be made larger, and consequently there will be less difficulty in introducing the hook, which if the opening be very small, and the patient unsteady, is not easy of accomplishment; and as, in either case, the aqueous humour is almost sure to be discharged, it can make but little difference. The blunt hook, in some instances, will possess decided advantages, as by its use there will be less danger of producing opacity of the capsule; but still it will not always answer, as Mr. Tyrrell admits, because, being blunt, it will sometimes fail in obtaining a firm hold and bringing out a portion of the iris, and then it is useless.

We have now examined the principal topics discussed in the volumes before us, and have pointed out what we conceive to be the defects and excellencies of the work. Some interesting points we have been compelled to omit noticing, from want of space. On the whole, although we are unable to discover any thing very novel or very brilliant in the books, there is much useful matter in them, and some portions of the work will be read with satisfaction and advantage, particularly by those who take an especial interest in ophthalmic medicine. There are many omissions, even of important questions. For example, there is no allusion to the subject of sympathetic ophthalmia, occurring after injuries. Melanosis and cancer of the eye are likewise not touched upon. One great defect of the work, too, is the entire absence of all historical matter; a circumstance that will effectually prevent it from taking a high rank among the standard productions of the day; and although it is, as Mr. Tyrrell says, in his title-page, a practical work, yet it only exhibits the practice of its author, and of one or two of his colleagues. Had we, ourselves, proceeded on the principle pursued by Mr. Tyrrell, we should not have reviewed his writings at all.

THE LANCET.

London, Saturday, June 20, 1840.

The Vaccination Extension Bill and the Small-Pox Prevention Bill came on for discussion in the House of Commons on Wednesday evening last.

The subjects embraced by those measures occupied the attention of the House from five o'clock in the afternoon until twenty minutes before twelve at night.

The "Orders of the Day" for going into Committee on the two Bills stood first and second on the paper, and when Sir James Graham made the motion for reading the first "Order," he kindly proposed that Mr. Wakley should move, as an amendment, that the second "Order of the Day" be read. Thus the two Bills were brought under the notice of the House at one and the same time.

We regret, deeply regret, being compelled to state, that the discussion and divisions have ended in placing one great and important department of the practice of surgery under the immediate and direct controul, regulation, and authority of the Poor-Law Commissioners,—under that very Commission which, by its offensive and hostile conduct towards the medical practitioners of this kingdom, has occasioned more complaints to be made to the House of Commons, has excited more indignation and hostility amongst physicians, surgeons, and apothecaries, than any other proceeding, matter, or thing, which has engaged their attention within the last twenty years. And now, what is the response of the Legislature to the petitions, prayers, and remonstrances of an excited, insulted, and persecuted profession? The bestowal of additional legal powers upon their hard-hearted persecutors. The complete subjugation, in fact, in one great and all-important branch of medicine, of upwards of twenty thousand learned members of the medical community, to the authority and

the rules and regulations of the three unlearned, unprofessional, Commissioners of Somerset House Alas! it is a sorry picture. But will the profession awaken from its slumbers now? *Even yet* it is not too late for petitions and remonstrances. The *single prayer* of the petition might be, that *the Poor-Law Commissioners should not have the regulation of the practice of vaccination.* In less than one week from this period, *if the profession could but be aroused to a sense of* ITS DUTY *on the subject*, every member of the House of Commons would have at least one petition placed in his hands, of the nature described. Meetings should be held, and deputations should be formed, and visits paid, to the influential members of the Government. Every step that *can* be taken *ought* to be taken against this direful, and, if it be inflicted, this irremediable calamity.

Although the motion for adopting the Bill proposed by Mr. WAKLEY was lost, on a division, by a majority of 17,—the numbers having been—

For Mr. Wakley's Bill 39
Against it 56

yet several important provisions of his Bill have been ingrafted on the Bill of Sir JAMES GRAHAM, besides some other amendments, the chief of which are—

That the Boards of Guardians, under the authority of the Commissioners, be directed to make contracts with ALL, or with ANY, of the legally-qualified medical practitioners of the Unions, or Parishes; and *not alone with the medical officers of the Unions*, as was provided in Sir JAMES GRAHAM's Bill. There was a division on this amendment, but it was carried by a majority of nine; the numbers being—

For Mr. WAKLEY's amendment. 33
Against it 24

It also provided that *inoculation for the Small-Pox shall be prohibited*, by rendering it a misdemeanour, and punishable accordingly.

Sir JAMES GRAHAM has also undertaken that the payment to medical practitioners with whom the contracts are signed, shall be made *in proportion to the* NUMBERS *of persons actually vaccinated.*

These alterations will, we believe, be found to be of great practical utility; and they might render the Bill quite endurable, if the controulling authority, in this affair of medicine and the public health, were removed from a lay Commission. For this removal we again implore the profession to petition and remonstrate, without the delay of a day or a moment.

The following are the names of the 39 gentlemen who voted in favour of Mr. WAKLEY's Bill. On another occasion, the majority who voted in support of the POOR-LAW COMMISSIONERS' Bill shall be inserted:—

Aglionby, Major (Cumberland)
Alston, Rowland
Archbold, Robert
Barrington, Lord Viscount
Berkeley, Hon. Craven (Chel'm.)
Bewes, Thomas
Bridgeman, Hewitt
Briscoe, John Ivatt
Brocklehurst, John
Brodie, William Bird
Brotherton, Joseph
Busfeild, William
Dundas, C. W. D. (Flint)
Finch, Francis
Guest, Sir John
Hall, Sir Benjamin
Handley, Henry
Hector, Cornthwaite John
Hobhouse, Thos. B. (Rochester)
Johnson, General (Oldham)
Langdale, Hon. Charles
Lister, Ellis Cunliffe
Maule, Hon. Fox
Morris, David
Norreys, Sir Denham Jephson
O'Connell, Maurice (Tralee)
Parker, Robert T. (Preston)
Pattison, James
Pechell, Captain
Pigot, David Richard (Clonmel)
Roche, Sir David (Limerick City)
Rundle, John
Slaney, Robert Aglionby
Talbot, C. R. Mansell (Glamorg.)
Thornely, Thomas
Vigors, Nicholas Aylward
Ward, Henry George
Williams, William (Coventry)
Wood, Benjamin (Southwark)

Tellers, Mr. Wakley and Mr. Warburton.

THE presence of Father MATHEW among the drunken population of London should be preceded by that of Friend AQUA PURA, that the reformed people may at least have clean water to fall back upon, when the gin-puncheon is struck from beneath their feet. To exchange beer and spirits for the undisguisedly filthy liquor which the Water Companies squirt into our glasses and tea-pots, is unlikely with those who reflect—though few entertain the thought—that the untinctured beverage is saturated with living animals and dead mud,—"water" (says Mr. GLAZIER) "that comes from the Thames, "wherein all the privies, water closets, and "drains from all the houses go. That," he adds, "cannot be such water as the people "of London ought to drink, and do drink, "again and again." Mr. GLAZIER (a witness on the 5th of March last in the House of Lords) may well have been surprised at the quiet way in which the metropolitan public bear this iniquity, although he believes that they are very *willing* to have it abated:—"You will allow me," he tells their Lordships,*

You will allow me to say this much, that I consider the people of London ought to be supplied with water the best that can be got; the people are willing to pay anything for it; and I am astonished that persons in London will pay from one to five pounds per *solid mouthful* to please their appetites, and will take into their stomachs any fluid but what is pure and wholesome; persons, as I have said, will pay five shillings or five pounds a mouthful for anything they have to *eat*; and I am sure they would not *object* to pay any price for pure water. But the water that is coming from the Thames, wherein all the privies, water closets, and drains from all the houses go, that cannot be such water as the people of London ought to drink, and do drink, again and again.

Do you know where it is brought from? From Hammersmith.

Mr. GLAZIER (a builder) resides in St. Marylebone, and is, and was, last year, one of several thousand inhabitants who signed a petition for the introduction of the Artesian Well system into that parish. One of the noble lords put the negative question to him,

You know nothing, in point of fact, with respect to the plan of *Mr. Robert Paten* for bringing water from Watford, excepting that you think it would be desirable to bring purer water into London than you have at present?

No. If there was but a sufficient supply from Watford, for Marylebone alone, it would be a most satisfactory thing; and if you carry that out, you will deserve the thanks of the people and their prayers, and from many of them you will have their prayers conscientiously.

The petition states that the vestry of Marylebone are anxious for this supply of water. Do you know that?

Yes, they are, indeed. I took the petition into the room about twelve months ago, and it was so long I could not carry it, (out again?) and I am thoroughly convinced of the integrity of Mr. Paten's opinion and his veracity in every sense of the word. He has spent his fortune in this matter; and I am satisfied that no man deserves the prayers of the people of London more than he.

Mr. PATEN—judging from the evidence—is the Friend whom Father MATHEW should find in London, and with pleasure we introduce him to the notice of our medical brethren. The subject has been taken up by some medical advocates, and, for once, we are on the side of Sir H. HALFORD. We might, however, be justified in fearing that the zeal of Sir HENRY will abate, behind the back of the enthusiastic projector, only that we find his name on the "Provisional Committee" of the Company, indicating, probably, that he also holds the rank of shareholder. The Marquis of WESTMINSTER, addressing Mr. PATEN, says,

You are the engineer of the London and Westminster Water Company, which has been in agitation?

I am the practical engineer, as the projector of the scheme.

You have been some years endeavouring to supply London by means of Artesian Wells sunk in the vicinity?

I have, but not now from the vicinity, but from springs at a distance, which obviates the prejudice of some scientific gentlemen that Artesian Wells would dry up private wells, and thereby be guilty of a great public injury. By my present plan I can bring water to London as pure as if raised in the vicinity, and it will also be quite as cheap.

* The Marquis of WESTMINSTER in the Chair.

Then you have no doubt but London could be supplied by these springs, without having recourse to Artesian Wells?

I have not the least doubt of it. * * * We have a very correct account of the quantity of water in the River Colne, by Mr. Telford, who made his Report in 1833. That was the most extraordinary season of drought that has been known for half a century, and when he gauged the water at Watford it produced 10,800 gallons per minute. That was as much water as would supply a million and a half of people.

Did the company that is about to be formed satisfy themselves from that Report of the sufficiency of the water for the purpose?

They are quite satisfied of the quantity, and also of the quality. Sir Henry Halford told me that he would excite such an interest amongst the medical gentlemen that nothing should stop it, for the health of London absolutely required it. Dr. Paris told me the same; and so did Dr. Hamilton Roe, Dr. Stone, and R. Keate, Esq., Surgeon.

The great temptation that should be offered to a genuine bibber to quench his thirst, in place of swallowing the alcoholic draught which causes the appetite "to grow with what it feeds upon," is a brimming glass of pure cold water, sparkling like a diamond,—not the Thames admixture, a Treble X of slush, though sometimes made believe to be purified by a trickle through the filter of Messrs. Robins and Lipscombe. That such water might be found in every house in London, there seems,—from the evidence of Mr. Giles, the engineer, from the report of the late Mr. Telford, and from the statements of many impartial witnesses who were examined in the House of Lords, in February and March, 1840,—to be no doubt.* The "Report" of their Lordships, relating to this Evidence, is as brief as Parliamentary Reports always are, when the Members of the Committee either have not made up their minds to pronounce an opinion on the Evidence; or are unwilling to commit themselves prematurely to any particular views; or are desirous of leaving "the House" and the Public to decide without the bias of a Parliamentary recommendation in favour of, or against, some particular plan. The whole "Report" is comprised in the following words:—

"That the Committee have met, and have examined several witnesses, and have directed the Evidence taken before them, together with an Appendix and Index thereto, to be laid before your Lordships."

Twenty witnesses were examined, men of good practical knowledge, although, from their occupation, or their natural interests, not all of one way of thinking; for instance, there was Mr. Knights, Secretary to the Waterworks, whose engine sends the supply "from Hammersmith," and Mr. Inglis, the Clerk to the New River Company. This circumstance shows that the evidence was not all one-sided. Amongst the witnesses is an "M.D.," a gentleman of some experience in the water line, Jonathan Green, Esq., M.D., &c., Richard Phillips, Esq., and Mr. Maugham, the chemists; and Mr. W. Clapp, surgeon, of Welbeck-street,* also gave evidence on the subject:—

Jonathan Green, *Esquire, M.D., &c.*, examined.

Will you state your profession?

I am a physician and surgeon.

You know something about the quality of the water supplied to you, as you have a close boiler cleaned every month; have you found much sediment in it?

Yes.

What water is it?

It is supplied by the Grand Junction Canal Company.

How do you find the water?

Two years ago I had a new boiler put up; after it had been in operation about six weeks it became necessary to open the boiler; on taking off the top there was a large deposit of sulphate of lime.

You are the proprietor of fumigating baths?

Yes; in Great Marlborough-street. I have had them these seventeen years. I

* "Report from the Select Committee of the House of Lords appointed to inquire into the Supply of Water to the Metropolis; and to report thereon to the House. With the Minutes of Evidence taken before the Committee, and an Appendix. Brought from the Lords, 2 June, 1840. Ordered, by the House of Commons, to be printed, 4 June, 1840."

* The noble lords "squire" the dub and the first chemist, and "mister" the two last named gentlemen. A visit to Erlangen doubles a man's title, at one expense, in the House of titles.

have this boiler for the supply of steam to heat the rooms, consequently it is almost always boiling; in six weeks there was a deposit of calcareous matter at the bottom, about a foot and a half in diameter, and from four to six inches thick, principally sulphate and carbonate of lime, with animal and vegetable matter in solution.

Were you surprised to find so much?

Yes; it had been a source of great expense to me. I prevented its recurrence by every month letting eight hogsheads of water run rapidly through the boiler; sometimes once a fortnight, when I have a servant not much engaged. This cleans the boiler.

Does the water which you pass through the boiler bring a good deal of sediment with it?

Yes. At the first washing it is quite muddy; the deposit attaches itself to the inside.

You do not know that any improvement has taken place of late years in the quality of the water?

I am not aware of it; but during the last three years we have been obliged to open the pipes, and on two occasions a small fish, about the size of a sprat, had got into the cock of each pipe; on one occasion I saw an eel about six inches long swimming in the cistern.*

Why did you not complain of this state of things to the company?

I did not see that I could have any remedy. I was supplied the same as other persons in that district. I adopted the best remedy I could. My baths are not warm-water baths; they are gaseous baths; sulphur, or mercury, or any other required gas. I use the steam merely to keep the rooms warm.

This is, indeed, a pretty "state of things." Dr. JONATHAN GREEN could very easily add to his vapours one more, for the treatment of chalk-stones, on the principle of *similia similibus curantur*, by paying the Grand Junction a double rate, for the supply of calcareous deposit. Mr. CLAPP's evidence is chiefly directed to show that filtration will only purify the Thames water to the eye:—

Mr. WM. CLAPP, surgeon, of Welbeck-street, examined.

Can you speak to the state of the water supplied to the metropolis?

In my opinion, as a professional man, the water is impure and injurious; hurtful in the extreme; the water supplied to St. Marylebone is so impure, that no filtration or any subsidence can purify it. The inhabitants have sent in at least a dozen petitions in my time to the vestry, to take the matter into consideration; some against the quality, some against the quantity, and others against the charge for water. The water is so bad that it is not fit for use. The company have attached a notice to their receipts, stating that if persons who use their water will keep their cisterns clean they will find a very great improvement. Now I am perfectly willing to acknowledge that the water is much clearer to the eye than it used to be; there are not so many visible insects, not so many shrimps swimming about it, nor so much mud mixed up with it, but the water is equally impure; no process of filtration can separate animal impurity held in solution.

What is your opinion, as a medical man, of filtration?

That it is decidedly a failure.

Have you tried it?

I have. I will produce some specimens. There is a specimen of the water with a small quantity of sulphate of copper in it. No filtration would purify that water; it is perfectly clear and sparkling. I do not mean to say that the company's water contains sulphate of copper, but I bring that to show that no filtration would separate it. Here are specimens containing muriate of soda and sulphate of soda; but the great objection I have to this water is that it contains animal impurities. It will be seen that this water is perfectly clear, and, therefore, it may be thought that I ought to be satisfied with it, merely because it has been filtered. Filtration, proves nothing at all. The specimen, while perfectly clear is decidedly poisonous. I prepared these other vials, to show that this water, though perfectly clear, contains sulphate of iron and muriate of ammonia, a salt which is contained in large quantities in urine. Therefore the test by the eye is very fallacious.

Have you analysed the water?

Not chemically. But I do not object so much to water on account of its saline impregnations, as on account of the putrid animal matter dissolved in it.

But if you have not analysed it, how do you know all this?

We cannot keep it any length of time without its smelling; the very colour of the water is tinged. Mr. Paten sent me a bottle of water drawn from some place near Watford, as he stated; I examined the two very minutely as to their softness and taste.

Merely as to eye and taste?

No; the mere mixing of soap with them will prove the quantity of the sulphates, &c., contained in either. The water sent to me by way of experiment mixes with soap, and becomes perfectly turbid; the other water is not so turbid when mixed

* Sir Henry kindly taking a survey of the impurities, to report to the profession? Was there any *roe* in the sprat?

with soap; I think it contains more of the sulphate of lime. The softness of water is a decidedly necessary quality for domestic purposes and for drinking. The water stated to be brought from the neighbourhood of Watford, was admirably fitted for domestic use.

Your objection to the present water applies to any supply from a stream?

Decidedly so, or even to that brought to London in an open canal. The New River water may be pure in its origin, but its being brought in an open conduit instead of pipes would expose it to the very influences I have spoken of; dead animals are frequently thrown in; the washings of lands, people bathing, all render the water impure, which nothing but distillation can remove.

In another Number it will be right to give a few engineering particulars respecting the proposal of Mr. PATEN, and the abundance and chemical purity of the new water, and by that time we shall have matched the "interest" promised to be excited by Sir HENRY "amongst the medical men, so that nothing should stop it." Certainly, nothing *ought*.

The present supply of water to London presents a most marked example of the neglect of the Legislature to provide means for preserving the public health, and for remedying public nuisances; and, at the same time, of the debts which the community is continually contracting with spirited individuals and Companies, for amending, by their speculations, grievous public evils and inconveniences. It may be taken for granted that the Bushey Meadow water will eventually find its level in London. The supply of a million and a half of people with water, so that the truly vital fluid find its way to every nook and corner of every house, however humble; to every hand, however poor; to every pitcher, however rough; to every floor and crevice; ready at a moment to cover miles of roads, or to wet the tiniest wafer of a letter,—this is an achievement not equalled in utility or exceeded in ingenuity by any application of modern times; but when the infinite pipes pour the slough of cesspools into our dwellings instead of the unsullied waters of a spring, the invention is next thing to a curse.

By-the-by, if Sir HENRY HALFORD and Mr. KEATE—leading men, in the Councils of the Colleges of Physicians and Surgeons—be capable, as they told Mr. PATEN, of exciting *irresistible medical interest*, how comes it that not a whisper of their voices, or of that of their colleagues, has been heard in the present struggle, on the Vaccination Bill, between the Poor-Law Commissioners and their unfortunate professional brethren?

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

Tuesday, June 16, 1840.

PATHOLOGICAL MEETING.

Dr. CLENDINNING in the Chair.

GANGRENE OF THE LUNGS.

Dr. BOYD exhibited a preparation of gangrene of the lungs, remarkable only from the fact of the patient not having suffered from any symptoms of chest disease. He was a hackney-coachman, of most intemperate habits, frequently living, for a week together, upon gin. He was admitted into the St. Marylebone Infirmary, in the last stage of exhaustion, eleven days previous to his death. He suffered from pain in the stomach and with symptoms which were attributed to old rheumatic attacks, to which he had been subject. He had no cough. The nurse stated, that during the last few hours of his life she noticed his breath to be fœtid when she moved him in bed. Stimuli were administered from the first, but he did not rally.

After death a portion of the left lung, about one and a half inches long by three quarters of an inch broad, was found to be in a state of gangrene, and about to be thrown off into the cavity of the pleura; the pleura pulmonalis on this side was thickened, and adherent to the pleura costalis; there was an abscess in the right lung.

Dr. CLENDINNING had seen the case related. No suspicion whatever was entertained of any pulmonic disease. The case was remarkable from this fact, as well also as from the near approach to perfect separation of the diseased part which had taken place.

ANEURISM OF THE ARTERIA INNOMINATA.

Mr. SHAW had upon the table several preparations illustrative of aneurism of the arteria innominata. None of the cases occurred in his own practice, but were collected from the museum of the Middlesex and other hospitals. Mr. Shaw entered

into a rather lengthy account of the post-mortem appearances observable in the several cases. The observations and descriptions, however valuable, were, nevertheless, more suited to the lecture-room than to a society like the Pathological; and as but little of the history of the cases was detailed, and the auscultatory sounds, upon which the diagnoses were chiefly founded, unknown, or scarcely touched upon, we shall content ourselves by recording one or two of the more remarkable circumstances which they presented. In the first case, the tumour had completely enveloped the clavicle, which was nearly absorbed, denuded of its periosteum, and carious. Scales and spiculæ were found in the tumour at the part where it had been in contact with the bone. The subclavian artery was impervious, the carotid, patent. There was no pulse in the right wrist or arm.

In the second case, the thoracic duct had become obstructed and impervious, but there was no striking emaciation. The other cases presented nothing remarkable.

MALIGNANT DISEASE OF BONE.

Mr. Mayo read some details of three cases of malignant disease occurring in the femur, the tibia, and the lower jaw. In the second case, in which the head of the tibia had become extensively involved in disease, the amputation of the limb took place in nine weeks from the period of the receipt of the blow by which the disease was produced. This was a good illustration of the rapidity with which malignant disease of bone occasionally progressed.

CONGENITAL MALFORMATION.

Dr. Boyd exhibited a beautiful wax model, taken from a boy, the subject of a peculiar kind of congenital malformation. He was thirteen years of age. The malformation consisted of a deficiency of the anterior and lower part of the abdominal parieties, and also of the anterior portion of the bladder. On raising the mucous membrane of the bladder, which was exposed to view, the termination of the ureters could be observed with the urine dropping from them; which, as soon as it was secreted, immediately dribbled from the bladder, and excoriated the integuments in the neighbourhood of a rudimentary penis and scrotum. There was no urethra, no corpus spongiosum, and only a portion of the corpora cavernosa penis. There was a mere attempt at the formation of a scrotum. The testicles were contained in a double congenital hernia in each groin. The boy was in excellent health.

FATTY TUMOUR OF THE TONGUE.

Mr. Arnott showed some drawings and a preparation of a fatty tumour of the tongue. The patient from whom it was taken was a man about 38 years of age. He had suffered for eight years from the tumour, which was the size of a large walnut, and situated under the tongue. He stated, however, that it varied much in size; when he opened his mouth, the growth projected very much, and interfered with his speech. The tumour had the appearance of red, thick, and corrugated mucous membrane; it was soft, compressible, and varied in shape. Under the idea that it was ranula, Mr. Arnott cut into it for the purpose of injecting it and destroying the sac; when he found that it consisted of fat, and, therefore, extirpated it at once.

The case was curious, from the rare occurrence of a fatty tumour in that situation. Dupuytren had recorded a case of a similar kind in his "Leçons Orales," and Mr. Liston another in his "Practical Surgery."

The President, on leaving the chair, announced that the Pathological Society would hold no more meetings.

INTERESTING CASE OF ŒSOPHAGEAL ARREST OF DEVELOPMENT.

To the Editor of The Lancet.

Sir:—May I beg you to insert the following case of rare malformation, if you consider it of sufficient interest for the readers of The Lancet. Yours obediently,

Thomas Warner.

Cirencester, June 5, 1840.

On the 21st of Feb., J. D. was delivered of a male child, well formed externally, though small in size: the cries were as loud as is usual in new-born infants; and the first deviation from a healthy condition reported by the nurse, was a constant rejection of the food. Injections were used, and the intestines were evacuated, but still nothing appeared to pass into the stomach, although the child seemed eager for food, and applied itself to the nipple.

On watching more attentively the process of deglutition, it was evident that the attempt was immediately followed by a regurgitation of the food with saliva through the nostrils; thus clearly indicating some mechanical obstruction.

The child died on the 25th, and on examination it was found that the pharynx terminated in a *cul de sac;* and that from the cardiac opening in the stomach, the œsophagus, after passing in the usual direction upwards for about 1½ inch, terminated in a cul de sac also. In the intervening space no thickened structure, resembling the remains of an œsophagus, could be traced. The muscles elevating the trachea and pharynx were complete, and the muscular

structure of the pharynx and of a portion of œsophagus was obvious.

The stomach and intestines were in a natural state, but extremely contracted, as might be supposed.

TRANSLATION OF RICORD.

To the Editor of THE LANCET.

SIR:—Permit me to state, in reply to your correspondent "Alpha," in last week's LANCET, that in Mr. Langston Parker's small work, "The Modern Treatment of Syphilitic Diseases," will be found the opinions and practice of M. Ricord, which that distinguished surgeon kindly furnished to the author.

Allow me to refer to the favourable review of Mr. Parker's work in THE LANCET of February 15. I am, Sir, your obedient servant,

JOHN CHURCHILL.

Princes-street, Soho, June 16, 1840.

JALAPINE.

DR. BARNES, of Sydenham College, in his Lectures on Materia Medica, makes the following observations relative to this substance:—

"Jalapine, or the gum-resin of jalap, varies according to the quality of the drug; but, taking an average of the whole, it is in the proportion of about 15 per cent.; or, as a dose, one grain and a half of the jalapine to ten grains of the jalap. Like all resins, it is soluble in alcohol, æther, pure alkalies, strong acetic acid, &c."

ANOTHER SUCCESSOR FOR MORISON.

A HINT OF VAST IMPORTANCE.—At two o'clock, A.M., of the 9th inst., Dr. Horn, 13, Cannon-street, was called to visit—whom? A dead man! Dr. H. maintains that the generality of sudden deaths are apoplectic, and if prompt and copious phlebotomy is not practised, death will inevitably be the consequence. Apoplexy, he remarks, has been very prevalent of late. Was the disease accurately known when it existed, and the remedy duly appreciated, and seasonably practised, many, very many valuable lives would have been saved! The skilful physician can very readily foretel an approaching attack, and he can, by the self-same remedy, prevent the confirmed attack of this alarmingly fatal disease.

The above is the result of twenty-five years' successful practice, in the West Indies and at home. Even in this town, during Dr. H.'s residence of two years, he has been called in to several cases of threatened as well as confirmed apoplexy. All recovered. —*Preston Chronicle.*

MEDICAL REFORM.

MR. CARMICHAEL, of Dublin, has placed at the disposal of the Council of the Medical Association of Ireland the sum of £500, "to be applied to the carrying out of an ample and complete measure of medical reform."

SEROUS SECRETIONS.

On the 13th of January of this year, M. Guerin presented a paper to the Royal Academy of Sciences of Paris, in which he proposed to establish as a fact, that atmospheric pressure performed an important part in the function of secretion from the serous membranes, in the human body.—*Archiv. Gen. de Med.*

BOOKS RECEIVED.

A Practical Essay on the Disease generally known under the name of Delirium Tremens, written principally with a View to elucidate its Division into Distinct Stages, and hence to simplify its Method of Cure. By Andrew Blake, M.D., M.R.C.S., Physician to the Nottingham and Nottinghamshire General Lunatic Asylum, &c. Second Edition, revised and much enlarged. London: Longman and Co. pp. 112.

The Transactions of the Provincial Medical and Surgical Association. Instituted 1832. Vol. VIII. London: Churchill. pp. 435, with 35 plates.

A System of Anatomical Plates, with Descriptive Letter-press. By John Lizars, F.R.S.E. Parts 10 and 11.

TO CORRESPONDENTS.

A Medical Student will find an answer to his questions, in the body of this week's Journal.

The communication from *Mr. Owen* has been received, but, from its length, we have not yet had time to read it.

The letter of *Dr. Sigmond* was not received until Wednesday.

M. D., who writes respecting *Mr. Owen*, should exercise some research in the Museum to prove his case, and then, illustrating it by facts, expose the abuse that he castigates in his letter.

Mr. Wickham's note respecting the Aneurism of the Arteria Innominata, came to hand too late for insertion in this week's Journal; it shall appear in our next.

ERRATA.—In the last number, p. 424, col. 2, line 2, for "fairness," read *fitness;* line 20, for "examination degrees," read *examination for degrees.*